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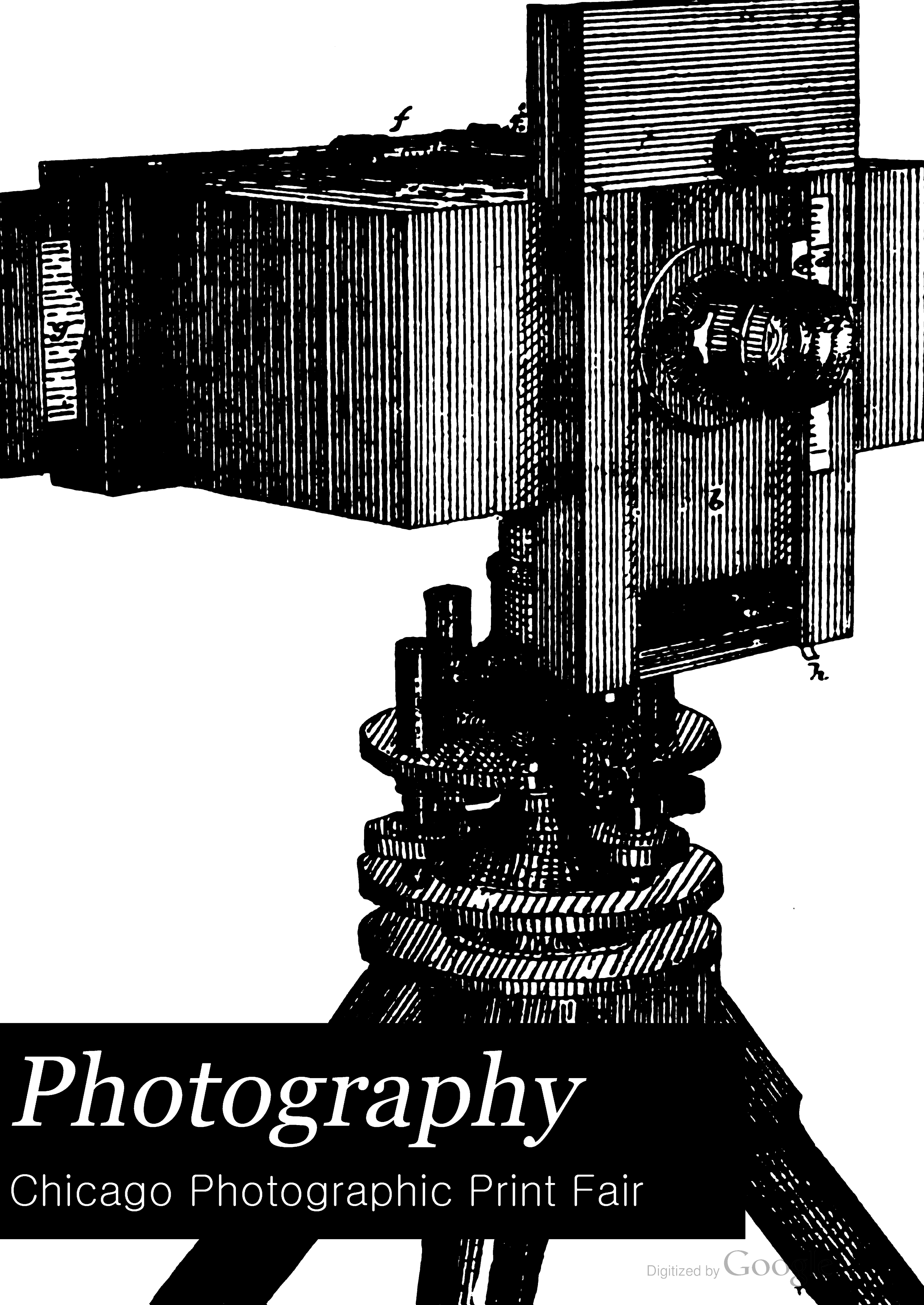

Photography

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Herr L. Giese writes, in the *Archiv*, *apropos* of photographic portraiture in ordinary rooms, that much better effects can be secured by substituting an ordinary dining room mirror for the white screen generally used to soften the shadows. By varying the distance between mirror and sitter, also the horizontal and vertical angle of inclination of the mirror, all kinds of effects can be produced, and the dull lustreless appearance of most "at home" portraits avoided. Those of our readers who indulge in this branch of the art will not be slow to take the hint.

We may observe that a good sized mirror, mounted on a stand with casters, and hung on trunnions to admit of placing it at any desired angle, is a very useful piece of furniture to have in a professional photographer's *atelier*, and such an accessory has been used by Mr. Alex. Hesler since 1852. We believe, however, that it is little used by the fraternity generally, and make mention of it here, because we think it ought to be more widely known.

◆

We direct the attention of our readers to the specification of a patent recently granted in England to Joseph Julius Sachs, for "Improvements in the manufacture of pliable plates and surfaces as a substitute for glass for photographic and other purposes," published in our Patent Intelligence. In an editorial on Flexible Negatives, the *British Journal* of March 28 remarks that this may turn out to be just what is wanted as a support for gelatine films. We do not know whether the invention has been patented in this country or not—but do not think it has.

The same article corrects two very prevalent errors in regard to paper negatives—viz.: the idea that the grain of the paper will show in printing, and that the same sharpness cannot be secured as with a negative on glass.

In reference to both these points, we may quote a statement by Mr. W. Coles at the meeting of London and Provincial Photographic Association, to the effect that a firm engaged in the manufacture of gelatino-bromide paper for negatives had on view two negatives (presumably of same subject) and showed prints therefrom to parties interested, who were asked to say which was which, In most cases they selected the print from the paper negative as the one they thought had been printed from the glass.

We recommend this subject to the attention of such of our readers as have time to experiment in that direction, and shall be pleased to see specimens and record progress in the matter at any time. For large negatives—especially enlargements—paper offers many advantages, notably cheapness, portability and non liability to breakage, besides lightness and small space occupied for storage.

◆

It was with sincere pleasure that we perused the following reference, in the *British Journal of Photography*, to a gentleman whose letters to that

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paper at a former period were read by the present writer with a good deal of both instruction and entertainment: "Among the Americans who are at present on a visit to this country, one of the most distinguished, certainly the most distinguished in the transatlantic world of mechanical science, is Mr. Coleman Sellers, of Philadelphia. For several years prior to 1864 Mr. Sellers was the American correspondent of this journal, and the trenchant and able manner in which he treated of the various current matters of interest in those days will be remembered by many. Rarely has any journal been blessed with so genial a correspondent as Mr. Sellers. The cares of an increasing business (now one of the largest and most important in the world) compelled the retirement of Mr. Sellers both from his position as our correspondent and also from that of an executive officer of the Philadelphia Photographic Society, greatly to our regret and to the loss of photography. Previous to his retirement, however, he rendered a service of unspeakable importance to our art—science in completing arrangements by which Mr. M. Carey Lea became his successor. Of Mr. Lea's valued services this is not the place to speak. With regard to Mr. Sellers it it enough to say that in the optics, the mechanics, the chemistry and the practice of photography, he was quite at home. We trust he will enjoy his visit to Europe."

The writer especially recollects the enthusiasm with which Mr. Sellers wrote of the Globe lens, at the time of its introduction by Harrison and Schnitzer. And we are inclined to think his enthusiasm justified, for although nearly, if not quite, a quarter of a century has elapsed since the Globe was introduced to the photographic world. and scores of wide-angle lenses have since been invented(?), yet, where neither extreme width of angle nor rapidity are prime requisites, it stands to-day without a superior, almost without a rival.

◆

GLYCERINE IN GELATINE EMULSION.

In the *British Journal* of March 28. appears an editorial under the above heading. The results of some experiments are narrated, which prove that the addition of say half a drachm of glycerine to the ounce of emulsion after cooking, greatly facilitated the removal of the soluble salts during the subsequent washing, and also shortened the time of development by rendering the film more permeable.

Incidentally it was found that, with a sample of gelatine addicted to pitting, the addition of glycerine completely cured the defect.

◆

In the same number of the same journal is a short paragraph which seems to indicate a slight misapprehension on the part of its writer. "Writing diamonds" have been quoted in American photo stock lists from time immemorial, and used for marking negatives and other purposes; the article referred to by the *British Journal* is, if we understand the agent's advertisement, a very different and superior article, and is called an "engraving diamond." We know nothing of it personally, never having seen one, but judge entirely from the terms of the circular, which says, "the point of the engraving diamond is finished under the microscope so that like a pencil it will mark, cut or engrave in any direction in which it is turned." The price is certainly high enough to call for a very superior article.

◆

THE PHOTOGRAPHIC RENDERING OF COLORS IN THEIR PROPER SCALE OF LIGHT AND SHADE.

The above heading describes what has been one of the chief difficulties with our art-science from its inception. It will of course be understood that we refer, not to actual reproduction of colors by photography, but to their representation by their equivalent shades in monochrome. This is a difficulty that occurs in almost all branches of photography, portraiture, landscape, copying, etc. A well-known instance as applied to landscape is the case of an orange tree in full fruit—called by some one "the most brilliantly contrasted thing in nature"—which, as reproduced in a photograph, has the dark green leaves and bright yellow fruit almost indistinguishable in shade.

But perhaps it is in copying paintings, whether oil or water color, that this peculiarity of the sensitive film is most strongly felt. It is no unusual thing for the scale of tones in a painting to be entirely upset in the photographic copy. But it is needless to multiply examples, they will suggest themselves to any one. The reason, of course, is well enough understood—the point of greatest visual intensity and that of maximum chemical action are situated a large part of the length of the spectrum apart. Various attempts have been made from time to time, with more or less success, to correct this defect, and now our illustrious *collaborateur*, Dr. Vogel, seems to have made a distinct step in advance. We take great pleasure in calling the attention of our readers to his recent communication to our esteemed contemporary, the *Photographic News*, which we reproduce *in extenso* in this number. Our contemporary makes the following editorial comment: "Our colleague, Dr. Vogel, reserves to himself, for the present, the details of the process by which he renders collodion plates more sensitive to the yellow rays than to the blue, but that he has succeeded in solving the difficult problem appears evident enough from a photograph of a color table which accompanies the communication we have printed in another column. For the reproduction of paintings by photography the process should be singularly useful."

◆

DARK ROOM ILLUMINATION.

This subject has been pretty thoroughly agitated on both sides of the Atlantic, and the end is not yet. It is needless to repeat here the discussions at the Chicago Photographic Association and Amateur Club meetings, and Dr. Garrison's deductions from his experiments on the actinic and illuminating value of different colored media, as these matters have been published already in several photographic journals. Suffice it to sum up the matter by saying that Dr. Garrison's conclusions were that up to date we have no better medium for dark room windows than ruby glass of suitable shade, (for there are some samples of ruby glass in the market almost worthless for this purpose), although some operators, who find the ruby light very trying to their eyes, may advantageously use the orange-green combination, which he places next on the list in balancing the capacity for excluding actinic rays against that for transmitting visual ones. Mr. Carbutt, who has been experimenting somewhat in this direction, has come to the conclusion that pot-orange glass, coated on one side with deep red lacquer, on the other with "matt" varnish, is on the whole the best, at least when oil or gas is the source of illumination.

Mr. Gentile has been using green and orange glass for a long time, and could not be induced to return to ruby for any consideration.

Mr. Geo. G. Rockwood, at a recent meeting (March 4) of the Photo. Section American Institute, N. Y., gave the results of some experiments which substantially corroborate Dr. Garrison's conclusions; his light was a kerosene lamp, and his final deduction that "a lantern covered with orange, green and ground glass was entirely safe with very sensitive plates." (He used plates registering 25 on the Warnerke sensitometer.) So far as we know, no one on this side has been using a strictly yellow light by which to develop dry plates, but in England, especially the northern part, they seem to be very enthusiastic over what they call "canary medium."

(We should be obliged, by the way, if some of our English friends would send us a sample of this; it can of course be transmitted by mail?)

At the meeting of the Photographic Society of Great Britain, March 11th, Capt. Abney read a paper on "Illumination of the Dark-Room," in which he rather condemned this material, but Mr. Debenham disagreed with him, saying that his experience was that "canary medium" was better than orange paper, ruby on pot metal, or cherry fabric. Canary medium is better than either of these. After repeated trials for his dark-room, yellowish green glass and yellow paper proved the best. Supposing three media, red, orange, and yellow, to have all of them the same photographic power, then the one having the greatest visual power should be selected. He did not rely on spectroscopic experiments, for there was a divergence of opinion among those who made it a study.

At the technical meeting of the Photographic Society of Great Britain, March 25, Mr. Debenham showed a dark-room lantern, one side of which was covered with one thickness of deep yellow paper, and two thicknesses of ordinary green oiled silk, such as is used for surgical purposes, while the other had two thicknesses of both paper and silk. A candle was the source of light. Those present considered the light "sufficient to read by and ample for development." A negative was shown "on a plate of about three times the rapidity of the average rapid commercial plate"—whatever that may mean—which had been developed at a distance of six inches from this light without any indication of fog.

The whole matter is thus summed up in a few words by our contemporary, the *News:*

"In respect to this subject of dark-room illumination, no matter how widely divergent the opinions expressed of late, there seem at any rate one or two points very clear, viz.: that an orange light affords sufficient protection to the photographer under ordinary circumstances, and that the advocates of ruby light grow fewer every day. We have repeatedly said that in the matter of light in the dark-room it is for the most part a question of 'give and take.' If you want to exclude all actinic rays, have recourse to a deal board or a brick wall at once, but if you want to see when you are at work, light of some description must be admitted. And we repeat here that diffused orange light, as little of it or as much of it as you please, is in our opinion the least injurious to the film, compatible with permitting you to see what you are doing."

There is no doubt that a ruby light admits of the use of higher actual illuminating power with the same actinic effect than almost any other color, but, nevertheless, it may not—in fact does not—enable you to "see what you are doing," so well as the orange-green, because the latter shows objects much more nearly in their natural colors. This, and its much less irritating effect on the optic nerves, will undoubtedly cause it to gain in popularity.

Mr. Geo. Smith, in an article on "Safe Light" in the *British Journal* of March 28, after stating that "a general revulsion of feeling has lately taken place against the red light, most usually considered the only safe one to employ in the dark room for developing gelatine dry plates, and experience has shown that the most rapid plates now in use can be safely developed in a degree of light which a short time back was considered by most people to be absolutely inadmissible," goes on to attribute the change to the fact that the plates as now sent out by most reliable makers, although even more rapid, perhaps, than formerly, are not nearly so liable to fog. The reason he assigns for the better quality of plate now turned out is, that they are exposed to less light in manufacture.

Briefly stated, Mr. Smith's theory is, that any gelatine plate, or any other plate sensitized with silver salts, even the most sensitive, will bear a certain amount of exposure to light without detriment,—even with advantage if rapidity is the first consideration,–but that formerly most of the rapid plates sent out by the makers had already been subjected, during manufacture, to the full amount of light which they would bear, and often a little more; so that a brief exposure during the subsequent operations of development, etc., to even the weakest actinic light inevitably produced fog. Now, however, the leading manufacturers are much more careful in this respect, their operatives, moreover, having become accustomed to the operations of the manufacture so that they can work with much less light than they used to consider necessary; therefore the plates now sent out will bear some considerable exposure to light without injury, although they are much more sensitive than the earlier ones.

At the February meeting of the Chicago Photographic Association, Dr. Garrison expressed the opinion that the dry-plate makers in this country generally are using too much light in their operations, and attributed the generally admitted superior clearness and brilliancy of his own plates to the circumstance that he used only lamp light filtered through two thicknesses of ruby glass, and very little even of that, for making his emulsion and flowing his plates. He (Dr. G.) was much troubled with fog when he commenced dry plate making, and had no doubt it was due to the use of too much light.

At the March meeting of the same association Mr. Hesler expressed the opinion that much of the "deterioration of dry plates by keeping," complained of by many users of them, was due to excessive exposure to light during manufacture. A plate, he said, might work all right when newly made, but as it became older would gradually deteriorate from the effects of this exposure, on the "continuating action of light" theory, so that after a while it would fog hopelessly on development.

We commend this subject to the attention of our readers, and shall be happy at any time to record the results of any experiments bearing upon it.

◆

PERMANENCY OF PRINTS ON READY SENSITIZED PAPER.

In a paper read before the New castle-on-Tyne Photographic Association, March 11th, "On the Permanency of Silver Prints," Mr. R. Stanley Freeman charges much of the fading now complained of in albumen prints to the use of ready sensitized paper. He says: "The next consideration is the ready sensitized paper, and whether its introduction is in any way answerable for the fading of silver prints. I have been led to the conclusion that it is. The accusation is sweeping, I admit; but as it is founded upon practical experience, and not theoretical reasoning—theory and practice not always agreeing, especially in photography—I shall stand by my statement until refuted by the comparative experiments of others.

"It has been our custom—rather an apathetic one—so long as a paper would 'keep well, print quickly, tone easily and yield prints of good quality' to be content, giving no thought to the morrow of such prints.

The method of toning, the mounting medium and the quality of the mounts have been from time to time put forward as the delinquents in bringing about fading, and albumen more than once has been pointed out as the culprit; but a bill of indictment has never, to my knowledge, been preferred against durable sensitized paper. Well, it is done now, and therefore, the sooner you constitute yourselves a grand jury to inquire into its merits the better, and if you are unable to return a true bill, my experience will not be verified."

In the discussion which followed the reading of Mr. Freeman's paper, Mr. J. P. Gibson did not agree with the author's remarks on ready sensitized paper, especially those prepared with albumen in a state of decomposition. He had used ready-sensitized papers for many years, had always found it equal in quality to paper sensitized by himself, and far less trouble.

At the March meeting of the South London Photographic Society, the same subject was under discussion. Mr. York could not see how prints on ready sensitized paper could be any less permanent than those on ordinary freshly silvered paper. Citric acid is generally used as the preservative, and is neutralized with carbonate of soda in the final wash before toning. He desired to call attention to the importance of this final wash, even with ordinary paper, as it tended to neutralize any trace of acid there might be in the paper or fixing solution, which latter is not always neutral.

(Our readers must recollect that their English confreres "hardly ever" fume their paper.)

Mr. York had found by experience that prints made on paper floated on a weak silver bath, although when new they looked just as vigorous as those on paper sensitized on a strong silver solution, yet they bleached much more in course of time than the latter.

Mr. Parkinson did not think the results from preserved paper could be so permanent as those on ordinary freshly sensitized; he found the former to tone quicker, and to contain less silver than the latter.

Mr. Ayers said that the use of citric acid for preservative meant more gold used in toning. With one commercial sample he used forty-two grains of gold to tone eleven sheets of paper.

We should be pleased to hear from any of our readers, professional or amateur, whose experience will enable them to throw any light on this subject.

◆

SWING BACKS AND RISING FRONTS.

The above subject has lately been considerably ventilated on both sides of the water. We presume our readers generally are aware that the swing-back has two distinct uses, one of which, in fact, is in direct conflict with the other. This part of the subject was pretty fully illustrated by Mr. P. B. Greene of this city, in a paper read before the February meeting of the Chicago Photographic Association. In this paper Mr. Greene called attention to an article on the same subject which had lately appeared in an Eastern journal, the writer whereof advised the use of the swing back (either vertical or horizontal) to assist in bringing different planes into focus, and as compensating for the roundness of field of the lens,in portraiture, and showed that the effect of doing so would be to produce distortion—for instance, in case of a sitting figure, making the head smaller and hands or feet larger than they actually were. In case of using a short focus lens the defect would be still further aggravated.

This view was sustained by other speakers (indeed, it is a self-evident truth) but it was also shown that this very distortion might be made useful sometimes in correcting objectionably prominent personal characteristics in the sitter. Those of our readers who have not thought of this, may find the suggestion of value.

With regard to out-door work, the horizontal swing is seldom used, and when it is, almost invariably to assist in marginal definition. Of course, as Mr. Greene pointed out, the same distortion is produced in this case as in the other; but, as it merely exaggerates the perspective, it is not a serious matter.

As to the vertical swing in architectural photography, it is of course used only to preserve the parallelism of vertical lines when the camera is tilted, and its use in this way tends to throw the top and bottom of the picture still more out of focus than they would be were the ground glass perpendicular to the line of sight.

Mr. Greene stated that he generally kept his camera level in making architectural subject and used the rising front instead of swing back; in this he is supported by an article by Mr. W. E. Debenham in the *British Journal* of March 28. This, as both gentlemen pointed out, will generally involve using a lens able to cover a larger plate than that actually used. For instance, the lens used by Mr. Greene for his 8x10 work (when he has room to use it) is one that will cover well a 14x17 plate, except the extreme corners which are cut off by the lens mount. His 8x10 box has six inches vertical travel to the front. If the lens used will not much more than cover the plate, it will be a question to be decided on the merits of each particular case, whether the swing back or rising front shall be used. It is simply a case of comparative definition.

It appears from an article on the same subject, by Mr. W. H. Wheeler in the *Photograpghic News* of March 21, that some photographers are under the impression that "plumbing" the ground glass when the camera is tilted throws the image out of drawing by lengthening the vertical lines. But, as Mr. Wheeler points out, this is a mistake, the fact being that the vertical lines are too short when the ground glass is inclined.

Mr. Debenham, in the article already referred to has shown one advantage of the rising front over the swing back which seems to have escaped the attention of the other writers on this subject. We give his own words: "An additional reason for preferring the rising front to the swing back arises from the fact that the top of a high building is generally much more lighted than the base and the foreground commonly requires most light of all. Now, with the camera tilted, the circular opening of the diaphragm is presented to somewhere near the center of the building, and the top and the foreground receive equally the smaller amount of light that comes from the opening of the diaphragm as it is seen somewhat sidewise in an elliptical form.

"When, however, the camera is kept square and the front raised, the lower part of the building, *i. e.*, the upper part of the image, has the full circular opening of the stop presented to it, letting in the greatest amount of light, whilst the top (the most strongly illuminated) part of the building and the sky have the narrow, semi-edgewise view of the diaphragm presented, and the supply of light cut off accordingly, thus equalizing to a considerable extent the illumination of the whole picture."

Both Mr. Debenham and Mr. Wheeler refer to the fact that a distorted negative, made by tipping the camera without "plumbing" the ground glass (or, as sometimes happens, through the necessity of "tipping" beyond the range of compensation provided by the vertical swing) can be corrected in copying by correspondingly inclining the picture to be copied and the ground glass of copying camera. Similarly, Mr. Debenham shows that a distorted copy of a map or drawing produced through want of parallelism between original and ground glass may be corrected in this way.

A knowledge of this fact, it seems to us, would have been very beneficial to the makers of sundry lantern slides which have been publicly exhibited in this city.

While on this subject we may mention, although it does not strictly belong to it, that "barrel distortion," produced by a single lens, or "hour glass" distortion by a portrait combination, can be remedied at least to a great extent, by copying the negative with the same lens with which it was made, unless the original negative occupied nearly the entire available field of the lens. Of course, for the correction to be absolutely perfect, the second copy must be the same size as the original sub ject, but in practice, even when copying the negative the same size it will be rectified to a great extent. Again, in case of an architectural subject made with a portrait lens, if the same lens be used as objective in a lantern, the image on the screen will be rectilinear to all practical purposes.

THE ETHER-OXYGEN LIGHT.

We reprint *in extenso* on another page an article with the above heading which appeared in the *Photographic News* of March 14, and also a communication from Prof. Plymmon Hayes, M.D., written for this journal, and intended partly as an answer to the former article.

It is very evident that, although the idea of using ether vapor in place of hydrogen originated in England, and the first apparatus for this purpose was made there, yet our trans-Atlantic friends are evidently behind their American confreres in regard to perfection of detail in this class of lantern work.

So far as we know, the Ives saturator is almost exclusively used on this side of the Atlantic when ether or other liquid hydro-carbon takes the place of hydrogen or coal gas. Some other arrangements have been tried, with a view to avoid payment of royalty on the above invention, but in nearly every case have been abandoned as dangerous. We do not wish to be understood as saying that the Ives patent is the only possible solution of the problem; but the fact is undoubted that, up to the present time, Mr. Ives seems to be the only person who has grasped the true principles of success, and practically applied them.

Within what narrow limits the conditions of safety lie, may be gathered from the fact that an increase of half an inch in the diameter of the saturator tubes is sufficient to render the apparatus liable to dangerous explosion. Moreover, as the makers say in their instructions to purchasers, care must be taken that no more ether be left in the tubes than is held by capillary attraction in the cloth filling; *i. e.*, they must be well drained. They say: "Drain not more than ten seconds—then put on the caps. The ether is held in place by capillary attraction, which does not act perfectly for a height of more than two inches: for that reason *the filled saturator should always stand on a nearly level surface, to prevent the ether from draining into one end.*" The italics are theirs. As to the rotation to be observed in opening and closing the various taps in lighting up or extinguishing the light, Mr. Wright and the makers of the Ives patent are in accord. Indeed, common sense would dictate this method of proceeding to any one; but if we are to believe all of Mr. Wright's statements, common sense is not an ingredient in the mental composition of all lantern operators.

Mr. Wright says that ether of .730 sp. g. may be used, but nothing less concentrated. Quoting again the instructions furnished with the Ives saturator, we read: "The specific gravity should not be greater than .720 at 60° Fahr. or .708 at 80° * * * * *Keep at least 10 feet away from any flame when filling the saturator, and never allow any chamber containing ether to become heated. Remember that ether vapor (unlike hydrogen and coal gas), diffuses rapidly downward; also that it vaporizes much more readily in a warm room than a cool one.*"

Some writers on this subject seem to hold the theory that dust in the oxygen bag may cause explosions. Mr. Wright, it will be seen, does not take much stock in this theory, while Dr. McIntosh, of this city, one of our most experienced lantern men, ridicules the idea. The latter gentleman, by the way, informs us that naphtha may be used in place of ether with the Ives saturator at a considerable saving of expense. There is a great difference of opinion between Dr. McIntosh and Mr. Wright as to the efficacy of wire gauze packing in a mixed jet, the former maintaining that it is an ample protection, while the latter, as will be seen, calls it "a vain delusion, doing more harm than good." We would like to have this subject thoroughly ventilated, and our columns are open to correspondence on this point.

Mr. W. Broughton, the inventor of the particular form of apparatus known as the "Ethoxo" and who complains, by the way, that injustice has been done to him by connecting that name with the apparatus that exploded at Chadderton—writes to the *English Mechanic*, apropos of that unfortunate accident, to the effect that the apparatus there used was on the old "wash bottle" principle, long since discarded by him as dangerous. His opinion is that the explosive compound was formed, not in the generator, but in the bag, and not on the evening of the explosion, but the last previous time of using the bag. His theory is that upon the pressure being removed after its last use, the ether entered the tubes and thence the bag; this, on being refilled with oxygen, formed the explosive compound, and this, together with insufficient weight on the bag, would tend to produce an explosion; for, if the explosive velocity of the gas be greater than the issuing velocity, the flame will travel along the tube.

Mr. Broughton continues: "One of the most essential points in a good generator is that it may be emptied to the last source after each time of using. This insures there being no mistake about the quantity of ether placed in the tank; and here I should caution all those who have in use any generator containing absorbent material, such as sponge, flax, coke, etc. Ether, from constant use and contact with oxygen, deteriorates and becomes acid; this is retained by the absorbent material, and when fresh ether is added the oxygen does not take up sufficient to make the light safe to work. A very simple test as to the safety of the gas is the color of the flame in the by-pass of the lantern, which should be whitish and slightly luminous, and the lime should not become incandescent before the oxygen tap is turned on at the burner. Attention to this will insure safety in working. Pumice safety chambers, as recommended by Lewis Wright, Esq., are really not required with ordinary care."

We have forgotten the distinctive features of

Mr. Broughton's arrangement, and do not remember the date of its publication (it was described in the *British Journal*), but if Mr. B. will send us an illustrated description we shall be pleased to publish it—and if it seems to possess any special merits, to point them out.

In our next number we hope to have an article by Dr. Kierstetter on this subject.

DEVELOPMENT OF GELATINO-BROMIDE PLATES.

BY PROF. H. D. GARRISON, M. D.

The end to be attained in every case, is the separation of the bromine from the silver to the extent to which the bromide of silver has been exposed to light, but no further. It is possible to reduce all the silver to the metallic condition by various means, but unless the reduction is proportioned to the action of the light to which the plate has been exposed, it is evident that no image can be expected. Several distinct methods are employed with success to effect this reduction, and yet, in every case, the chemical *modus operandi* is substantially the same.

If a bottle is partially filled with either the ferrous oxalate or the ammonia pyro. developer and then tightly corked and briskly shaken, a partial vacuum will be produced as shown by the slight inrush of air when the cork is removed. Some of the oxygen of the air has been absorbed in both experiments. If these developers are freely exposed to the air, more and more oxygen will be absorbed until the entire demand has been supplied. Since these mixtures can take oxygen not only from the air but from compounds which give it up easily, we may designate them as deoxidizing agents. All developers are, broadly speaking, deoxidizers, but when in action upon the exposed plate, they obtain the supply of oxygen, not from the air, as in the foregoing experiments, but from water, which consists of oxygen and hydrogen.

If, however, a developing mixture can obtain oxygen from water in the presence of bromide of silver, why cannot it do so at all times? Hence it may be asked, why was the oxygen of the air taken in our experiments? The fact is that a developer cannot decompose water without some help, which the bromide of silver gives. The bromine practically says to the developer, "You pull on the oxygen and I will pull on the hydrogen of water and between us we can effect its decomposition." The results are that the developer gets oxygen, the bromine gets hydrogen and the silver is set free.

When ferrous sulphate is added to potassium oxalate, a change of partners as it were, is at once effected, according to the golden rule of chemistry that "might is right." In other words the strongest elements or groups arrange themselves satisfactorily and leave the weaker ones to unite as best they can. In this case the potassium and sulphuric acid radical (SO_4) are the strong parties, and hence potassium sulphate is at once formed. The iron and oxalic acid are thus obliged to unite as ferrous oxalate or remain free. But ferrous oxalate is a very unstable compound, having a strong tendency to pass into ferric oxalate, which can only be effected by the appropriation of a little more oxalic acid and the consumption of a little oxygen. Hence the necessity of free acid in this developer. Whether that acid be oxalic, citric or sulphuric is not very material, because, in the latter cases we may suppose that oxalic acid is set free by the action of the acid used upon the potassium oxalate.

While the series of chemical changes occurring in the pyro. developer are widely different and far more complex, the results are the same. Water is decomposed, its oxygen going to the pyro. while its hydrogen seizes the bromine thus liberating the silver. But pyro. alone cannot effect this change with any degree of facility and rapidity. It must be aided by some powerfully basic or alkaline substance. Ammonia is the alkali usually employed, although, as all know, other alkalies will answer. Thus carbonate of ammonia, sodium hydrate and sodium carbonate, potassium hydrate and potassium carbonate are frequently employed. Lime (calcium hydrate), lithium hydrate and lithium carbonate, and probably similar compounds of caesium, barium, strontium, etc., will subserve the same purpose. The only question is, which is, all things considered, the best? Thus far the consensus of opinion seems to point to ammonia as the best, and the sodium compounds as the next best agents to aid the pyro.

The next questions to be settled are, what are the best proportions, and what agents as restrainers and modifiers, are most desirable? As these are problems which can only be solved by empirical practice, I began, some months ago, an analysis of the leading developing formulæ in use. I subsequently learned that the gifted editor of the *British Journal of Photography* had anticipated me, to some extent, in this direction.

I therefore gladly incorporate his analyses of eight formulæ with thirteen others which I have figured out, making a total of twenty-one. Of these 17 use ammonia to aid the pyro., while the remaining four use the carbonates of sodium, potassium, etc.

I have reduced, for comparison, all the formulæ to the amounts present in a fluid ounce of the finished developer. In consequence of the very complex character of many of these formulæ, and of the ambiguous language employed in the "directions," it is possible that some errors have crept in; but, in the main, it is believed the figures given are correct.

The figures represent the quantities present in each fluid ounce of finished developer.	Pyro grains.	Ammonia Liq. minims.	Bromide of Am. or K.	Sulphite sodium.
Maudsley	3	2¾	½	
Wratten (ordinary)	2	⅓	1/12	
" (Instantaneous)	3	⅓	5/16	
Swan	1½	3	3	
Nelson	1½	12½	2¾	
Edwards	2	2	¼	
Thomas	1	6	2½	
Rouch	1⅜	5	1⅜	
Norden	1¾	2	1	2
Cramer	2	3	2	3
Taylor	1⅘	2 3/10	⅖	
" (Sulphite)	¾	2 1/7	2/7	1
Ackworth	2½	5	3 1/10	
Sutton	1	4½	1 1/10	
Fry	1⅓	2⅔	⅚	
Lambert	2	3	1½	
Furnels	2	2¾	11/12	4

Messrs. Genlain and Carbutt use carbonate of sodium, while Mr. McDonald employs carbonate of potassium.

Mr. Gentile has recently proposed a solution of Lewis' concentrated lye, the composition of which is unknown, and probably somewhat variable. Mr. Carbutt recommends in one formula 86 grs., and in another 96 grains of carbonate of sodium to the ounce; while Mr. Genlain uses 48 grains to the ounce. Mr. Carbutt also introduces in one case 3 grains, and in another 6 grains of sulphite of sodium to the ounce.

Perhaps the most astonishing feature of the entire exhibit, is the widely different proportion of pyro. and ammonia in the finished developers. The amount of bromide it will be observed is also very different being more than thirty-six times as great in some cases as in others.

A NEW PHOTOMICROGRAPHIC CAMERA.

BY FREDERICK W. MERCER, M.D., F.R.M.S.

The chief hindrance to the general use of photography in connection with the microscope has been the somewhat complicated, cumbrous, and expensive character of the apparatus. The usefulness and value of photographs of micro-objects has been recognized, and though the camera can not in all cases take the place of free-hand drawing or the camera lucida, yet it can be successfully applied to most objects, and far surpasses all the means of securing a truthful delineation of many objects. Its value in legal investigation, or for conveying correct impressions to the popular mind have also received recognition. Photomicrography is practically applied by few persons, compared with the whole number who do more or less work with the microscope, and there can be but one reason, the general impression that many difficulties and expenses attend the process. The amateur has found that the use of the camera as usually applied to such work, has necessitated much preparation, and the use of not a little space, and he has therefore regarded the procedure with a mind full of doubts as to its utility in his limited periods of work. This state of things has hampered the advancement of the science. It is only by making photography of more general application that we can hope to perfect the relationship between the two, and this more general application can only be brought about by the substitution of a very portable, light and easily applied apparatus for the cumbersome and complicated contrivances now in use. As a step in this direction, I have had constructed a very portable camera, after the plan of Harting. There have been several modifications of Harting's camera, but none of them have proved better than the original. Stein* has shown such an apparatus, but it lacks steadiness. Max Hauer† has described a small camera of ready application, but it consists of too many parts and is expensive. The instrument I have devised can not of course accomplish all that can be done with the larger and more complicated appliances, but it will do all that any camera can do at the same focal distance and upon the same size plate with lamp-light. Nay more, it works quicker than the larger apparatus with its *direct* lamp-light. The apparatus shown in the accompanying illustration consists of a box of light wood, A, a cone of light metal, B, a tube, which takes the place of the ordinary draw tube of the microscope, C, and the frame carrying the ground glass and plate holder, D. The tube C, is fitted to the cone B, so that it may be withdrawn for the insertion of an eye-piece or amplifier. To the box A, is attached a brass strap, a, the lower end being slotted to admit the passage of a binding screw secured to a button, b, astened to the arm of the stand. As soon as the object is coarsely focused upon the ground glass the cone and its tube are raised slightly, say about a quarter of an inch from the body of the microscope, and the binding screw is then tightened, securing the weight of the camera, etc., upon the arm of the instrument, thus removing any undue pressure upon the rack and pinion, or fine movement of the tube, during future manipulation The fine focusing when completed leaves nothing to be done but to push the ground glass frame on till it is replaced by the plate holder when the picture may be made.

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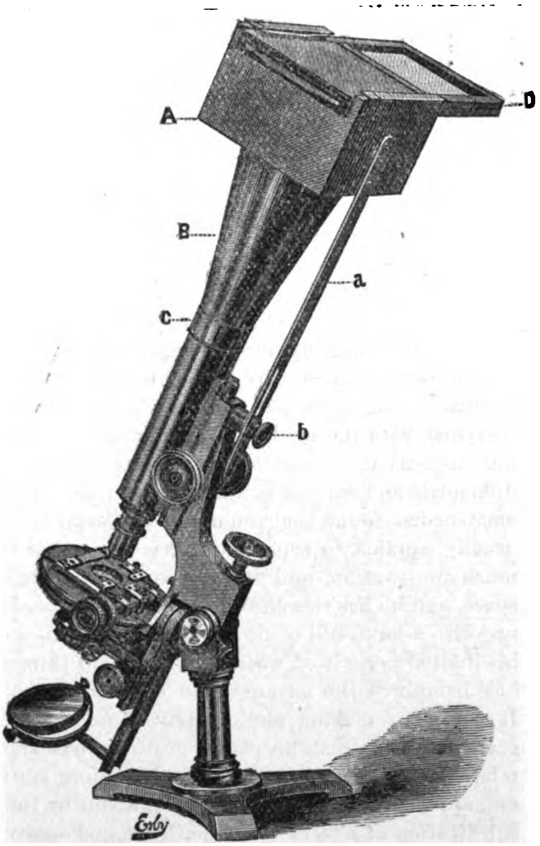
*Thanhoffer's Das Mikroskop und seine Anesendung, 1880, p. 48.

†Deppel's Das Mikroskop, 1882, p. 576.



The features of this apparatus are: Its great portability, measuring when the draw tube has been removed from the cone, 4¼ × 4¼ × 9 inches; its ready application to the microscope in any position, from the vertical to the horizontal, requiring but a few minutes for its adjustment without changing the position or light, at least for moderate powers; its special fitness for the amateur, being moderate in first cost and inexpensive in use from the size of the plate used. Though the plate is small, 3¼x4 inches (lantern size), it is very useful and will meet most of the needs of the amateur workers for whose convenience the instrument is intended.

There is a class of work of which this little camera is incapable, and in introducing it to the notice of microscopists, it is not intended to convey the impression that it will supersede other means where skilled hands and elaborate apparatus are absolutely necessary. To those who have but an hour or two of an evening for observation with the microscope, this camera may prove of service in securing a photograph quickly at the work table.

The box above the cone might be dispensed with, and the slide carrying the ground glass attached directly to the large end ofthe cone. The advantage in having the box is the shutter, which may be fitted to its interior for excluding light from the plate at the moment of completing the exposure, a preferable means to that of placing a piece of black paper between the objective and the source of light. Instead of having the ground glass and plate carrier in one frame, it might be desirable for some to have them separate, having more than one plate holder. The apparatus can at a trifling cost be attached to most stands, and when properly made should not exceed, including ground glass and plate holder, seven or eight ounces in weight.

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In our next number we expect to publish an article by Dr. Webster on "The Applications of Photography in Surgery," and one on "The Detection of Adulterations by the Microscope and Photography," by Dr. Belfield, the celebrated expert in this line of research.

A Common-Sense Instantaneous Shutter.

BY S. W. BURNHAM.

So much has been written and said about instantaneous shutters in the last three or four years, that it would seem nothing of importance could be added, and hardly any new device invented. Of contrivances more or less complicated, there is no lack on both sides of the Atlantic, but the more simple forms are perhaps less known. The one I have used, and found equal to every demand, is extremely simp'e, and can easily be made by any amateur who has the tinkering instinct. There is nothing particularly novel in its construction, and I should not have offered a description of it, had not the editor of this journal suggested my doing so.

The shutter first constructed was all made of thin hard wood, except the drop, which was cut out of a piece of galvanized iron, that being the first thing that came to hand at the moment. Subsequently, when about to take a long trip, and not having time to do the work myself, I had it duplicated, with some minor improvements, by a skilled workman, using hard rubber in place of wood, and thin brass for the drop. This made a much neater job, and had this advantage, that the working of the shutter could not be affected by wet or moisture. This particular shutter was made for a No. 1 Darlot Rapid Hemispherical lens, the dimensions being seven inches in length, and three in width.

In the diagrams, fig. 1 represents a rear view of the shutter; fig. 2 a side view of the same; fig. 3 a front view, with the drop in its elevated position; fig. 4 the drop; fig. 5 a side view of the latter; and fig. 6 the releasing-catch, or trigger, on a larger scale.

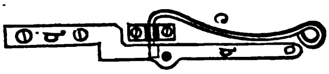

FIG. 6.

FIG 5.

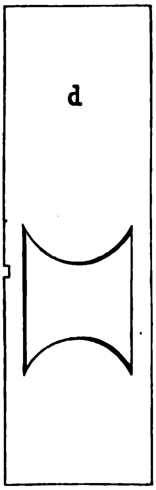

FIG. 4.

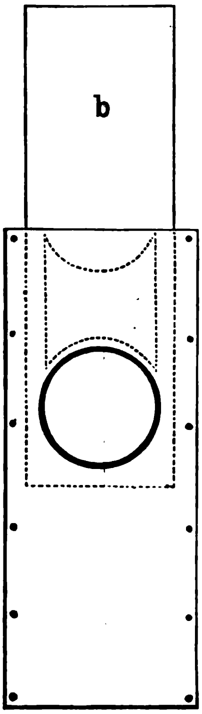

FIG. 3.

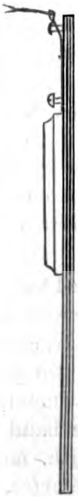

FIG. 2.

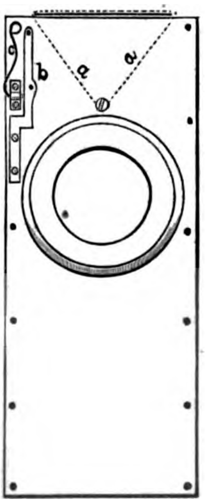

FIG. 1.

From the brass catch, *b*, a pin passes through the rubber plate, and engages, by means of a corresponding notch, with the drop *d*, when the latter is elevated as shown in fig. 3. A string is attached to the upper end of *b*, and a very slight pull, not exceeding 1-82 of an inch, will release the drop Prof. Garrison in making a shutter after this plan has added a small lever, *c*, the bent end of which passes under *b* and acts as an eccentric or cam to lift *b* when *c* is pulled back by the cord fastened to its upper end. This allows the catch to be released by a very delicate pull through a considerable arc, so that it is practically impossible to disturb the camera when the drop is released. By turning the lever *c* at right angles to the plane of the shutter, it serves to hold the catch free, so that the drop can be pushed by hand when the shutter is turned into a horizontal position. I have never disturbed the camera by releasing the drop by *b* alone, though some care is necessary to give only the requisite amount of motion, but I regard this extra trigger as a very useful and desirable attachment. When it is desired to make the shortest exposure, a small rubber band, *a*, is slipped over the end of the drop, which is bent at right angles to its length for this purpose, and to serve as a stop when the closed position is reached. The length of the opening in the drop is 1 3-16 inches in the middle, and 2 3-16 at the sides, the ends of this opening having the same curvature as the full aperture of the lens.

This shutter possesses several advantages, aside from its simplicity and cheapness, over most of the forms offered in the market. One of the most important is in the latitude of exposure which can be given, varying from one-fiftieth to a quarter, or even half a second. If the shutter is well made, the drop will run anywhere between the vertical position and an elevation of about 20°. In the latter position the speed will be less than half that in the vertical position, and of course intermediate positions will give exposures between these limits.

Some experiments have been tried to determine practically the equivalent exposure with and without the spring. Prof. Hough constructed an apparatus for doing this, by removing the pendulum and escapement from a clock movement, and attaching to the shaft of the minute hand a broad pointer six or eight inches in length, moving in front of a dial a foot or more in diameter, divided into ten degree spaces. The motion was made practically uniform by a fan attached to the last shaft of the train, and the velocity of the hand recorded with great accuracy on the Observatory chronograph. The value of one revolution of the hand was found to be 0.82 of a second. To the end of this hand or pointer was attached a thermometer bulb filled with mercury, and the apparatus placed in the sun and photographed when moving at this speed. The sun being reflected from this bulb, produced a sharp line of light from the commencement to the end of the exposure, and the duration of this interval was of course readily ascertained from the length of the arc. With the spring attached to the shutter this was found to be one-fiftieth of a second, and with the vertical drop, about one-sixteenth of a second. Of course the latter could easily be computed in accordance with the law of falling bodies, but the method employed is certainly better, since it gives in a practical way exactly what is desired. By turning the shutter in a horizontal position and pushing the slide across by hand, exposures can be made in much less time than the lens can be uncapped in the ordinary way. For very many subjects this will be found very useful. In fact, with the proper manipulation, every necessary variation between one second and one-fiftieth can be made, thereby adapting the exposure to almost every variety of conditions.

The drop is released as has been shown, by pulling the string, which is attached to the catch, straight back towards the operator. The convenience of this will be apparent to any one who has tried to photograph any rapidly moving object from the deck of a rolling and pitching sailboat, for example, when the camera is held in the hand, or steadied on one leg of the tripod. The shutter being released in this way, the camera can be pointed exactly at the object so as to ensure placing it in the center of the plate with no danger of failure. Indeed, with a common camera this can be as easily and certainly done as if it were fitted with a gun stock or any of the contrivances for holding it to the shoulder or otherwise.

As this shutter is less than 3-16 of an inch in thickness, it is readily carried in the pocket, and placed on the lens as easily as the common exposing cap, and as easily removed. It has nothing liable to get out of order, and is certain to be always ready for use. Professors Garrison, Hough and Bastin have made instantaneous shutters of this form, and they have found them as satisfactory in practice as I have done.

Any instantaneous shutter of whatever construction, which works only with a spring, is necessarily a failure for many purposes. In the first place, out of ten pictures which must be taken in less than the time necessary to use the cap, nine of them can as well be taken with a gravity exposure as with any shorter are. Nearly all marine subjects, when the camera is stationary, can be taken perfectly with the longer exposure and much better negatives secured; while shorter exposures will not give equally good results. It is very certain that a good, dense negative, such as one would ordinarily make of still objects, can only be made with the spring when all the conditions of light and subject are favorable. If a view is to be taken from a yacht in rapid motion, then of course the shortest time will be necessary, hough I have taken many views from the deck of a large steamer with the simple drop, where every detail was perfectly sharp. A better and sharper picture will be obtained by some stopping down. In this work I have generally used the 12 m.m. diaphragm, which makes the outer portions of the negative fairly well-defined.

Some very complicated instantaneous shutters have been devised, the object of which has been to commence the exposure in the middle of the lens, and to give a little more time to the foreground or upper part of the plate. A moment's reflection will convince any one that these are purely theoretical conclusions, and of no practical value, especially in an instantaneous, or very short exposure. In a full exposure, such as would ordinarily be made of an out-door subject by removing the cap, doubtless the time for the lighter portion of the picture might be reduced with advantage, but as no more time is given to the foreground by any of these shutters than by the one under consideration, and as in no shutter of any form is the sky, or any part of the picture, overexposed, it is evident nothing is really gained by any such complicated device.

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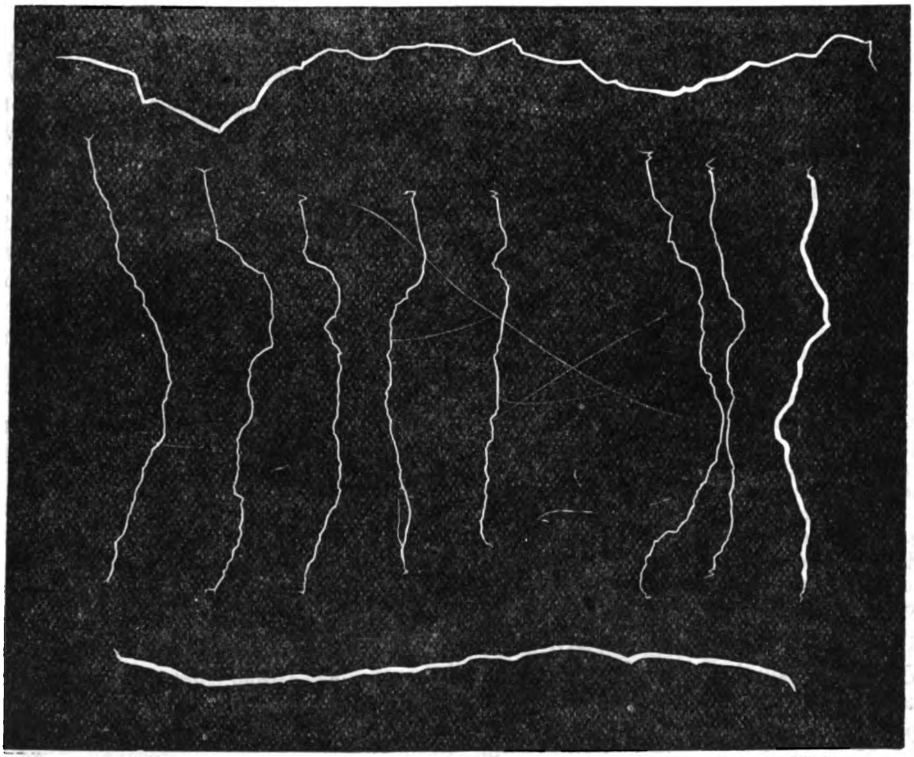
PHOTOGRAPHS OF ELECTRIC SPARKS.

The extreme sensitiveness of the dry plates cannot be shown more strikingly than by these photographs of electric sparks.

Wheatstone has demonstrated that the electric discharge from a Leyden jar occupies but the 1-24,000 part of a second, and yet the action of the light produced upon these plates is very marked.



An ordinary apparatus could be arranged very simply for photographing the sparks. In a room which can be darkened, the camera should be placed with the knobs of a Holtz or other electric machine in focus. After placing the plate in position and darkening the room, the cap is removed from he lens and the machine set in motion until a spark is produced; the shorter the spark the straighter will be its path: the cap is then replaced and the picture is secure.

The apparatus used for producing the sparks of which the accompanying cuts are exact representations, was an improved Holtz machine, giving under favorable conditions a seven-inch spark.

The peculiarly irregular path of the discharge is quite noticeable in these photographs, showing sometimes very sharp angles, as if the current had met with resistance too great to be overcome and had retreated from its original direction.

La Nature has published an article by Gaston Tissandier, accompanied by plates of lightning taken by M. Robert Haensel, of Reichenberg. The general character of these spark paths bear such close resemblance to the photographs of Haensel that the identity of the nature of the discharges is manifest. WILLIAM HOSKINS.

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THE ETHER-OXYGEN LIME-LIGHT.

BY PLYMMON S. HAYES, A. M., M. D.,

Prof. of Chemistry and Toxicology, Woman's Medical College, and of Analytical Chemistry, Chicago College of Pharmacy.

> "I consider that every generator *ought to have an empty chamber* to receive any suck-back or splash-back of ether which *may* occur, either from an upset or back pressure." "So predominant is this special danger, that in the American patent generator of Mr. Fred. E. Ives, purchased and now made by the McIntosh Company of Chicago, a fluid tank is superseded by rolls of cloth saturated with ether, through which the oxygen is passed. The desired object is attained; but such methods fail to insure *saturating* the gas, as the supply of ether is apt to prove insufficient towards the end. The vendors of this generator, in fact, in their circular actually contemplate the blowing off the ends of the generator, and its catching fire, as an event to be by no means unexpected, and give directions for "smothering" the flames. I do not share their confidence that such accidents would always be harmless."

The above quotation taken from an article by Lewis Wright in the *Photographic News* of March 14, 1884, does manifest injustice to a most admirable apparatus.

As I was the second person in Chicago to use Ives' ether-oxygen lime-light and have used it frequently, I can speak with some degree of authority bred of experience, which the author of the above paragraph manifestly could not have had from the manner in which he handles the subject.

To those who are not acquainted with the Ives' saturator a brief description may not be out of place. The saturator consists essentially of two horizontal brass cylinders of a diameter of from 1½ to 2 inches, and from 14 to 16 inches long placed parallel to each other. Each cylinder has a cloth filling which may be removed at will. The ether is entirely absorbed by the cloth and held by capillarity. The oxygen on its way from the reservoir cylinder, or bag, to the burner passes in part through the saturator and part direct to the burner.

I will leave it to the reader to theorize whether the oxygen will be more saturated with the vapor of ether by passing it through a cloth tube saturated with ether,and of a length of from 30 to 32 inches, or by causing it to bubble through a column of ether one-third this length. In practice I have ever found that the Ives' saturator never belied its name,and the saturated gas always answered the test for oxygen when saturated with ether as given by Mr. Wright, viz., "As long as the ether flame (without oxygen) is *white*, it is saturated or nearly so." There are two sizes of the saturator made, having a capacity respectively of 5 and 7 ounces of ether. To my certain knowledge the Ives' apparatus has been run continuousy without replenishing for two hours and a half, and this when the utmost was required of the light every minute of the time.

The rubber caps which are placed over the ends of the saturator cylinder, while fitting so closely as to preclude the escape of the ether or oxygen are so loosely fitted that if the pressure of the gas becomes greater than is necessary for the supply to the burner they will blow off by the gas pressure. This makes it impossible for an ignorant or thoughtless manipulator to leave the saturator connected with the gas receiver and gas turned on, unless there is an exit at the burner or the pressure be ridiculously low. It will be seen from this that the rubber caps act as a safety valve. Whoever heard of a steam boiler being condemned because it had an excellent safety valve, or of a "fire-proof" hotel lacking patronage because of an efficient fire escape.?

Should the ends blow off because the gas wa explosive by reason of being non-saturated—an accident which I have never known to take place—the resulting combustion of the ether would be most readily put out, in that the ether is held by capillarity, and consequently, we have to deal with what is equivalent to a burning solid, rather than with an exceedingly inflammable liquid and its disastrous possibilities.

There are over one hundred of Ives' saturators in use at the present time and they are in the hands of persons of all grades of knowledge in regard to the oxy-hydrogen blow-pipe, its chemistry and its physics. With this number of apparatus in use—one of which to my knowledge has been used not less than 50 times during the past winter by 4 or 5 different persons—I have yet to hear of the first accident.

I have no hesitancy, notwithstanding Mr. Wright's criticism, in recommending this apparatus as being the best on account of its being compact, complete, efficacious.

Dry Plates for City and Country Use.

I believe that dealers and plate makers do not fully appreciate the difference in plates required for large smoky cities and the pure air of smaller towns. A plate that will work rapidly enough for the latter and give plenty of detail will be quite too slow and hard for the former, also plates that are rapid enough for the dark days of November, December, January and February are quite too rapid the balance of the year, unless the parties using them will screen the light and use smaller stops. If makers would take the precaution to enlighten operators using the plates, on the difference of the action of light in short and long days they would have less fault found with their plates, and save themselves much annoyance and expense in having plates returned. Too large a volume of light in midsummer will make a negative flat no matter how short the exposure or small the stop.

The developer has much to do with the strength or flatness of the negative and as there are said to be over thirty-seven thousand various formulæfor dry plate developers it seems folly to try and formulate any, but in my experience the simpler you get it the better The acid pyro. and the alkali in some form is all that is required with a little sulphur to blacken. The nearer neutral you can make your pyro. and have it keep the less alkali of any kind you will need use, the more rapid your plates will be, and the more detail you will get in your shadows.

A. Hesler.

[to be continued.]

Opaque Dry Plate Negatives.

A correspondent in the *English Mechanic* asks for a process of copying plans, etc., for photo-lithographic work, with dry plates, which will give equal opacity with Eder & Toth's lead process as applied to wet plates.

We expect shortly to publish an article on "Photography in Prisons," by Mr. Wetmore, Recording Clerk Illinois State Penitentiary.

Professional vs. Amateur Photographers.

The ever increasing number of amateurs who within the last few years have joined the ranks of photography is a positively startling fact. In estimating the results that have followed, and are likely to follow the introduction of gelatino-bromide plates, it is one which many professionals look upon with undisguised alarm, whether rightly or wrongly we propose to discuss. Such is the unreasonableness, such the want of proper feeling, displayed by some that they choose to term "interlopers" the very men to whom modern photography may be fairly said to owe its existence. We cannot avoid thinking that it shows to what a height of selfishness, or perhaps we ought to say egotism, some persons can soar.

Photography is almost essentially the product of amateur experiment, the main result of which has been given to the world untrammelled and unpaid for. We all know of the early patent which was taken out for a photographic method, but it was soon relinquished entirely for the public benefit. Commercial photography, photography, that is, of magnitude—may truly be said to date from the introduction of the collodion process. What was done for its inventor by those who had risen to affluence through his means—the man who, practically, had invented a new art, a new industrial pursuit, a means of livelihood by which we are fairly within the mark in saying tens of thousands gain their daily bread—the man who enabled scores of decayed gentlemen, discharged clerks, and unfortunate tradesmen, not to speak of worthless handicraftsmen, the broken down butchers, bakers and candlestick makers, who rushed at the means of making a lazy living, soon to be a luxurious one, without training being needed or knowledge required? What was done for him? We should be ashamed to name the contemptible sum that was raised for the benefit of those he left behind him.

Are not, rather, the professional photographers themselves interlopers? Gelatino-bromide is to all intents and purposes entirely the outcome of amateur efforts: yet, if we were to see at the dealer's counter some of its earlier exponents side by side with a member or two of those great firms who order a few thousand plates at a time, we are afraid that the former, asking for a few dozen of the things he had called into existence, would have to bide his time till the interloping professional had been supplied.

It will not suffice to say that amateurs of this kind are not meant—that the amateur who buys a small apparatus and a good supply of chemicals and goes about taking his friends' portraits in every direction, is the class which is objected to—for to imply this would be making things still worse, and would be tantamount to saying that "we will not murmur at those people photographing without pay or reward who are likely to invent something new that may turn to our benefit; but we don't want any one to come photographing if we are not to gain by it." We appeal to the broader-minded, whom we really believe form a far larger proportion of our readers, if we have not rightly stated the way in which many professional photographers speak. Thus we see it is as ungenerous as it is illogical to complain of the influx of amateurs, and we do not think it will be difficult to show that it is equally unwise in every way to offer the "cold shoulder" to them. The absurd action of a firm of American photographers, who notified the closing of their account with the stock dealers with whom they did business on account of these dealers selling materials to amateurs, has been well laughed at by the intelligent men of business on either side of the water; but it is a fair example of the feeling we describe and deprecate. On many grounds we should advise professional photographers to encourage and assist the increase of amateurs. An example will illustrate our meaning. Let there be two or three well known photographers in a town, one of the three only sharing our views. If he show courtesy to amateurs he will enlarge the circle of his *clientele*, and more than that, it will be a strange neighborhood if he be not able to obtain an occasional pupil. This, even to a prosperous photographer, is all pure gain, as he could make appointments for lessons. If he charge (we could give instances where this is done) a guinea for a lesson of an hour it will be fairly paying work, and he will naturally increase both his reputation and his business, the other two photographers we have supposed, as a matter of course losing to that extent.

Many professional photographers have made acceptable additions to their income by teaching and supplying apparatus; though we have heard them complain that there is so great a demand for apparatus that the dealers and makers do not care to allow them a discount or commission, they being able to sell at first hand all they can produce. This is a point upon which it is not our province to enter; but we may be sure that the inexorable law of supply and demand will very soon cause a leveling of inequalities of this character.

We have kept to the last the most formidable difficulty–formidable in appearance only–the expectation that the more work done by amateurs the less there will be for professionals. This we, and many with us, believe to be a pure figment. Photography nowadays is a very different thing from what it was even a dozen years ago. The pictures which then would have delighted their originals would not be looked at now, on account of the increased excellence that characterizes photographs from the average professional and the added work of the retoucher. Now we would ask, is it reasonable to imagine that any every day amateur could be, in the brief time which he can give to the work, at all likely to produce anything that will compete against good average professional photography? On the face of it the proposition is absurd. Hence, no loss could occur from any such sourse; and further, the difficulties that the amateur will find to beset the production of really good work wou'd, through the very publicity obtained, place the professional photographer in a better position and enhance the reputation of his skill.

Finally, we might add that, if in intimate circles cartes and cabinets of friends were produced, a knowledge of human nature would enable us to predict that the self-same people would come to be taken by the professional portraitist; and thus, as in all other ways, would amateurs aid the professional photographer and improve his status.—*British Journal of Photography.*

WAX MATCHES FOR PRINTING TRANSPARENCIES.

BY H. H. CUNNINGHAM, B. A.

In my early attempts at making transparencies by artificial light on gelatino-bromide plates, I found more or less difficulty in determining the amount of exposure necessary; and this difficulty became greater when using different sources of light.

For example, a time exposure to a candle is fairly accurate when the same candle is used throughout, and the same distance from the source of light is observed. But even in the case of candles, there is a considerable variation in the light, according to the condition of the *wick*, both in quantity and quality, considered actinically—*e. g.*, a long wick gives a large flame but a yellow one; and though the total of light is greater, the amount of actinic light is probably much less; at any rate, it is very difficult to estimate.

Again, gas varies very much in the quantity and quality of the light being emitted, according as the quality and pressure of the gas varies; and the light from paraffine lamps is also of a very variable character, and hardly to be trusted for uniformity. It therefore struck me that a fairly uniform, simple, and at the same time easily obtainable source of light would simplify the production of transparencies, and I found what I sought in the simple wax vesta match. These vary very little in length and thickness among those of the same make, and they can easily be picked out of a size, and, if necessary, cut to an equal length with a pair of scissors; and since the same weight of wax burned in the same-sized wick (temperature and barometrical pressure being unnecessary to consider here) will give as near as possible exactly the same total of light, it will be evident that a very accurate measure of light is obtained by burning a given number of similar wax vestas.

My practical method of proceeding is this: At a distance of 12, 18, and 24 inches from where the printing-frame is placed, I have marks on a board, and I bring the wax vesta in position by sticking it on a pin, raised on a block of wood to bring it central with the printing-frame. Then, all being ready, I strike another match, touch the one on the pin, which of course instantly flames up, and which I allow to burn for half or whole of its length, according to the density of the negative. Of course, the first match is blown out as soon as the standard is ignited, and the head of the standard is pulled off as soon as its presence dulls the flame. As an example, an ordinarily dense negative at 18 or 24 inches distance will require about half of one of Bryant & May's wax vestas, burnt in the manner indicated. Dense negatives require two or more such vestas to be burnt, and they may be burnt either together or consecutively, it makes no difference, as we count the total of light as depending not upon the time of exposure, but upon the weight of wax burnt.—*Photographic News.*

PHOTOGRAPHY OF YELLOW AND BLUE IN TRUE PROPORTION OF THEIR INTENSITY.

BY DR. H. W. VOGEL.

It is now more than ten years since that I published an observation of considerable interest—viz., the process of "actinizing non-actinic rays," as the late Wharton Simpson called it; or a means to sensitize bromide and chloride of silver for yellow, green, and red rays, by mixing them with certain bodies which absorb the colored rays mentioned. I made my first experiments with the spectrum of the sun, and succeeded in photographing the red and yellow part of it. My observations and views met, in the first place, with some opposition. My late friend, Monckhoven, doubted them at first altogether. Carey Lea tried to prove that I was mistaken. The first who confirmed my results was Becquerel, the second, Major Waterhouse of Calcutta. These gentlemen confirmed the principle pronounced by me in 1873:—*That certain dyes, which have a powerful absorbing action for colored rays, make bromide of silver sensitive to those rays.*

I proved by further experiments that this action of absorbing agents on bromide of silver is met with only under certain favorable conditions: that is to say, an ordinary chemical sensitizer which combines easily with bromine, or chlorine, or iodine, and therefore accelerates the action of light on the haloid salts of silver, must be present. For instance, bromide of silver precipitated with an excess of nitrate, well washed, and dyed with fuchsine is sensitive for yellow and green rays; but if it is precipitated with an excess of soluble bromide the fuchsine has no action at all. Morphine, pyrogallic acid, and even gelatine, act like a trace of nitrate of silver, and in their presence fuchsine is a sensitizer for yellow rays.

But all these researches were, at first, of merely scientific value for spectrum analysis. Already, in 1873, I tried to take pictures of colored subjects by stained bromide plates: but I soon observed that bromide plates made sensitive for the yellow rays of the spectrum showed only a trace of sensitiveness for the yellow color of our pigments. The reason of this was, that the yellow rays of the spectrum are many thousand times more intense than the yellow rays of the most brilliant yellow pigment. But I observed (also 1873) that it was possible to get a picture of a dark violet ribbon on a light yellow ground in their true proportion of intensity by the interposition of a yellow glass which diminished the intensity of the blue rays.

Years passed and yet no useful application came of these observations. Ducos du Hauron and Albert did something in 1877. But they aimed too high; they wanted not to reproduce colors by photographic tones, but by colors again, a task that naturally led them into a sea of difficulty. Albert and Ducos employed for their purpose colored collodion and colored glass, using the latter to sift out such colors as they did not want. Cros, in Paris, worked somewhat after the same fashion.

Of late years, an effort has been made to make use of the principle in gelatine photography. Some five years ago I published researches on the subject, showing that gelatine plates could be made sensitive to certain colors. Eosine was found to be the most favorable absorbing medium, a body that had been employed in collodion by all experienced in this branch of photography, having been first proposed for the purpose by Waterhouse. Eosined gelatine plates are already a commercial article, and have been manufactured for some time past by Messrs. Clayton and Tailfer, of Paris. Eosine, I found, materially improves the sensitiveness of the yellow, and lessens the sensitiveness of the plates for blue. This, by the way, is to be observed in other bodies, as, for instance, in fuchsine, and it is precisely this quality, viz.—the increase of sensitiveness for yellow, and decrease for blue—that is of the utmost importance, for without it, in photographing colors, the blue would act as powerfully as the yellow, or, in other words, appear as bright as the latter.

I examined with the spectroscope the commercial eosine plates, and found that for yellow rays they were about double as sensitive as for the blue; their sensitiveness for red, on the other hand, is not greater than in ordinary plates. Still the sensitiveness to yellow was not sufficient to permit the reproduction in their true proportion of intensity of yellow and blue colors together; and for this reason I tried if it were not possible to increase the sensitiveness of yellow still more, as well as to increase also the sensitiveness of red. In both these objects, I am happy to say, I have succeeded, but it is with collodion, and not with gelatine. I am able to produce wet collodion plates which are at least ten times more sensitive for yellow than for blue. With such plates I am enabled, in fact, to reproduce yellow objects in a light tint, and blue ones in a dark tint. All colors, in fact, have an action upon the plates so long as these colors contain yellow and green rays. A photograph taken of the color-table that appears in my manual gave a most surprising result; the light green came out lightest, yellow was very light indeed, while the blue gave quite a dark photographic tint. I forward you a print from the negative.—*Photographic News*

We expect shortly to commence the publication of a series of articles on Photo-Engraving, by a gentleman of long experience in that branch of our art-science.

THE ETHER-OXYGEN LIME-LIGHT.

BY LEWIS WRIGHT.

The Chadderton explosion has pointedly directed attention to this form of the lime-light, and it is an important question whether or not, as stated in a letter to the *Daily Chronicle*, it ought to be avoided by all public lecturers, for it has marked advantages. Its effects are, as stated by me some time ago, at least as brilliant as oxygen burnt with house gas in a "mixed" jet, and sometimes more so, for I have successfully shown a crystal of Brookite (a most difficult one owing to its strong red color) in the polariscope with the ether light, which on a previous occasion had baffled me with house gas. And to be able to use the "mixed" or most brilliant form of jet in a country village where there is no gas, must be to many a great boon.

First of all, it ought not to have been stated by Mr. Etheridge in the *Daily Chronicle*, that the apparatus which exploded was the "ethoxo." That name was adopted by Mr. Broughton, who devoted much time and study to perfecting this form of light for his particular form of apparatus; and whatever merits may belong to other forms, that name ought to be left to his, and no one else has a fair right to use it. This is a case in point, for it is not the "ethoxo" which has exploded. Some time since another explosion took place, also said to be of the "ethoxo," but it was not; and the unfairness of pirating the name needs no further proof. Let every inventor or improver christen his own apparatus, and stand or fall by it alone.

As far as I can ascertain, the apparatus which exploded was only a modification of the earliest or wash-bottle form. To use such a form habitually would be in my opinion, for reasons which will appear, an effectual form of suicide, and I have seen two other forms of apparatus emanating from Birmingham which also appear to be highly dangerous. Mr. Diggle being a photographer, however, this journal has a sort of double claim upon him, and he would confer a real service on many by fully describing his apparatus, and every ascertainable detail, even the most minute, which occurred on the eventful evening. We ought to have the exact quantity of ether used, its quality and price, and where bought; the size and top area of the bag, the weight used, and anything else that can be known. Meantime, it is only possible to treat the matter generally.

Whether the ether light is "dangerous," then, "will depend." On the one hand, it has special dangers or risks above and beyond those of mixed gases; on the other hand, these admit of being certainly guarded against. But they will only be by that class of people who, fully realizing the dangerous points, are absolutely methodical and cool in the methods needed to meet them.

This is readily seen if we consider the nature of the process. From one bag of oxygen a small portion is passed through ether, and in its passage becomes saturated with ether vapor, which is burnt in place of house gas Another tube from the same bag feeds the oxygen to the jet as usual. Thus the same pressure is given to both, which is very handy and simple.

Now comes the element of special danger. The saturated mixture cannot explode, but only burn; and a small quantity of oxygen carries over a large quantity of ether vapor. But when the vapor is diluted with some thirteen times its bulk of oxygen it is violently explosive, and much less than that is probably very unsafe. Hence in the "wash-bottle" or any other "very simple" form of generator, appalling danger may arise in either of three ways:—1. The supply of ether may become so far lowered that the bubbles of oxygen do not rise through sufficient liquid to saturate them. 2. All but absolute ether contains some alcohol and a little water; and in using this over and over again, the ether may become so much diminished as to lead to the same want of saturation. 3. The ether will vaporize by the mere heat of the room sufficiently to create a small pressure in the generator. If, then, the tap connecting with the oxygen bag should be opened first, liquid ether will be driven back into the tube supplying oxygen to the jet, or may be even into the bag itself, thus forming an explosive compound. We may distinguish between the last and first two causes of explosion by the the results. In Nos. 1 and 2 the explosive compound would be in the generator, and that would burst. In No. 3 the bag would burst. At Chadderton the bag burst; and therefore ether must have been driven back by pressure into the bag, by some mismanagement or accident with the taps and weights.

As long as the ether flame (without oxygen) is white, it is saturated, or nearly so. A blue flame shows the vapor is either explosive or very near it.

Now for the conditions of safety: not one of which can be neglected with impunity, permanently, though it is wonderful how Providence watches over fools. First of all, good ether must be used; 730° will do, but must not be more than thrice used, and ought not to be more than twice used, keeping each remainder (*i. e.*, second or third) in a separate bottle. That some ether be "wasted" is then a *sine qua non*, though most people can find some other use for the waste. To fill the generator away from a flame is obvious.

Secondly, I consider that every generator ought to have an empty chamber to receive any suck-back or splash-back of ether which may occur, either from an upset or back-pressure. The want of this is the most dangerous point about all the Birmingham and some other apparatus I have seen. An empty cell is not enough; it must be so arranged that the ether *cannot* splash direct into the oxygen supply-tube; that is, this tube must not open opposite the place where the splash, if any, must occur.

So predominant is this special danger, that in the American patent generator of Mr. Fred. E. Ives, purchased and now made by the McIntosh Company of Chicago, a fluid tank is superseded by rolls of cloth saturated with ether, through which the oxygen is passed. The desired object is attained; but such methods fail to insure *saturating* the gas, as the supply of ether is apt to prove insufficient towards the end. The vendors of this generator, in fact, in their circular actually contemplate the blowing off the ends of the generator, and its catching fire, as an event to be by no means unexpected, and give directions for "smothering" the flame. I do not share their confidence that such accidents would always be harmless.

Thirdly, the generator must contain *ample* ether to cover all contingencies, and be so constructed that the use of the required portion *does not diminish* the quantity in action, or the path of the oxygen through the fluid. In Mr. Broughton's generator, ten or twelve ounces are placed in the reservoir, and about four ounces is used during two hours. The reservoir is traversed by a number of horizontal septa or partitions, which compel the gas to travel backwards and forwards in a path which is not shortened till a certain level is reached. This is the great point, with an empty or safety chamber, to be looked to in all generators; and none ought to be purchased without a diagram. I wish Mr. Broughton would bring his own generator fairly before the public; but in that case I consider even he ought to furnish an exact diagram of the interior, that the operator might know precisely what he was doing.

I am not sure we have the most perfect generator yet. I should be inclined, were I planning one, to construct it with a *feeding reservoir* made of glass with a cork in the top, so that the precise point of the fluid could be seen, and more put in if needed.

The best taps are needed. And as ether will dissolve all grease and make them "grind," they may be lubricated with glycerine. After use, all the ether should be *at once* emptied out, and transferred to the proper bottle as "once used" or "twice used." That "twice used" should only be used the third time with one-third of fresh ether.

Last, but not least, is *method.* There is only one; and those who cannot depend on themselves never to vary it, are in danger; for the taps must be used in a certain order and no other. Suppose all the tubes connected—oxygen-bag on to the generator, with a branch to oxygen-tap of dissolver, and vapor tap to the hydrogen of dissolver. There will be vapor pressure in the generator; and if the bag-tap or oxygen-tap to dissolver be turned on first, ether will be driven back as already explained. The hydrogen-tap of dissolver (or jet) must be *turned on first invariably,* to give vent to all pressure, and not till that is done must the oxygen from bag be turned on; then, in a moment or two, long enough to clear the tube of air, but not enough to make explosive vapor in the lantern, light the jet, after which, when the lime is warm, turn on the oxygen and adjust as usual. At the end or when stopping, turn off the oxygen at jet *first, always.* If only a stoppage, leave the hydrogen-taps on a little as usual, and *never turn them off first* in any case; but next turn off the oxygen at the bag if the exhibition is at an end, or if you must put out the light. The vapor-tap to the jet, in brief, must be *first and last vent of the generator.* And never use less than one hundred weight pressure on the bag.

I confess I cannot see how an explosion is to occur under these conditions. But it will be seen how remarkably easy it is to neglect one or other of them; and the real way to safety is to see the precise danger of each breach, which I trust will now appear. I ought, however, to add that Mr. Broughton considers he has at last discovered an absolutely secure "safety packing." It is well known that explosions have occurred through the common gauze-packing, which is a vain delusion, doing more harm than good; through Hemming's safety packing of wires wedged in a tube; and even through Gurney's water-chamber. Mr. Broughton uses pumice-stone, granulated to a certain gauge, and tells me that owing to the checked and irregular paths thus caused, an explosion cannot be made to pass through it. Rather than pack the jets with this, he prefers a separate chamber, with a fluted union-nozzle at each end for india-rubber tubes; and one of these may be connected below each of the jet or dissolver nozzles. They, however, reduce the pressure and the light considerably, and two cwt. will be needed to get the same result as with one cwt. without them. This packing is, however, well worth experimenting with, and if really found certain will be a great boon, as such chambers with unions can be used on any lantern without the least alteration.

The danger from dust in the oxygen-bag itself is to me a very doubtful matter. But if it exists, I may, perhaps, point out that it can be absolutely guarded against by "filtering" the gas, either in the dry, wet, or adhesive manner.

It may not be amiss to point out how seldom any loss of life occurs from explosion of a bag. As a rule there is a loud report and severe concussion, with much breakage of windows, but no more. I only really remember one case, though there are doubtless more. At Chadderton, also, there was no death directly caused—a few seem to have been stunned, and a few probably etherized; but the death occurred from crushing or suffocation on the stairs.—*Photographic News.*

Chicago Photographic Association.

The April meeting was held at their room, 229 State St., Wednesday evening, April 2d. Prof. Garrison, president, in the chair.

Reading of minutes of last meeting dispensed with.

Mr. Douglass announced that it had been found advisable to postpone until next meeting the subject of electric light portraiture, as it was very desirable to have an arc light to practically illustrate the matter; this could not be managed in that room, and the Van Depoele Electric Light Co. had kindly offered the use of a room at their factory, corner Van Buren and Franklin, but could not make the necessary arrangements in time for this meeting.

It was therefore decided to postpone the subject until the May meeting, and a committee was appointed to attend to the matter.

Mr. Greene exhibited some 5x8 street views on McDonald plates; lens, front combination of one-fourth Holmes, Booth & Hayden, worked with very small stop; all except one of the views had about one second exposure (one side of street in shadow) the exception being a park view which had half a second; it was full-timed.

Some were developed with the potash developer, some with iron, and Mr. G. was inclined to give the preference to the latter. The prints were generally pronounced excellent.

Mr. Gentile invited the president and members to attend the next meeting of the State of Illinois Photographers' Association, as the subject of benevolent or life insurance fund would be brought up for discussion at that meeting and the opinion of the officers and members of this association on that question was desired. The Chair replied that speaking for himself, he would try to accept the invitation, and hoped as many members as possible would do likewise.

Mr. Jones asked how much washing a gelatine plate requires after development, before it can be exposed to daylight with impunity. The Chair thought just sufficient to remove every trace of the developer, and no more. Just how much time, and how much water, were necessary to accomplish this, he had never made any experiments to determine.

Mr. Jones said his reason for asking the question was that there seemed to be a good deal of diversity of opinion on the point.

A short time ago, a gentleman (a brother photographer) came to his gallery and was in his dark room watching him develop. While he (Mr. Jones) was just commencing to wash off developer, this gentleman undertook to open the door, and, on being requested to leave it closed until the plate was in hypo and covered up, replied: "That's all nonsense; I frequently take my plates out under the skylight after a very slight rinse to remove bulk of developer." This individual maintained that, once developed, the plate was no longer sensitive to light.

He was convinced to the contrary, however, by the following simple experiment, performed by Mr. Jones for his benefit: Mr. Jones sat the gentleman under the skylight, made a negative of him, developed it thoroughly, and gave plate a prolonged washing afterward, until the party was satisfied every trace of developer must be removed.

Then he pointed his camera out of window and made a view on same plate, which, on development, showed a good image, thus giving a portrait and view on the same plate.

Mr. Greene stated that he had developed negatives in a small closet, then washed them under a kitchen hydrant exposed to full daylight, yet they fixed clean and showed no trace of fog. He knew a photographer who habitually leaves his negatives after thoroughly washing off developer, in a rack under skylight, where they sometimes remain for days before being fixed. They would always fix clean as long as they were not put into developer again. An exposed, but undeveloped plate, or an unexposed but developed plate, would fix clean.

Mr. Gentile did not believe a plate was injured by exposure to white light after developer was slightly washed off.

The Chair recollected making an experiment bearing on this question some years ago; he had a negative copied from a book, containing letter press, this he laid on a fresh emulsion plate, and placed the two for a considerable time in the sun, on removing the negative a very distinct reproduction of the letter press was seen on the emulsion plate. He did not try to fix it, but was satisfied the image was metallic silver, which of course would be insoluble in hypo or cyanide.

It must be remembered, however, that this was printed in the sun, which was a different matter from exposure to diffused daylight in-doors. Bromide of silver was very hard to decompose by a weak light.

Mr. Gentile called attention to the fact that mercury intensified wet collodion negatives, if superposed upon one another and exposed to a strong diffused light, as close to a window, will print on one another.

Mr. Jones did not think this had any bearing on the question under discussion. It was well known that light, if allowed to act long enough, will produce visible impressions on almost anything—for instance, a poster laid or pasted on a pine board will eventually leave a reverse copy of itself on the board.

In his own practice, although he thought he had as safe a light as any one in his dark room, yet he found it almost impossible to handle dry-plates and keep the margins clear, although he could take a plate out of same box, put into fixing solution and have it come out perfectly clear glass.

This satisfied him that the fogged margins were due to exposure to light in working the plates; *i.e.*, in the dark room. He rather thought he would be able at a subsequent meeting to show them a plate clear at one end and fogged at the other, yet both ends treated exactly alike up to the point of washing off developer.

Mr. Greene observed that previous to the introduction of dry plates he had followed landscape photography by the wet collodion process about 24 years. It was his custom to develop his plates in the field, wash with about 2 oz. water to remove greasiness, then flow with a mixture of equal parts glycerine and water, and leave them exposed to sunlight in an open plate box until ready to pack up, finishing his washing at home; never had any trouble with fog, shadows fixed perfectly clear. He did not believe any damage would have resulted from leaving them exposed to the sun in this partly washed condition for three weeks.

Mr. Jones thought the lights would be strengthened by this treatment.

Mr. Greene had not found it so.

Mr. Young promised to show Mr. Greene, next time the latter called at his gallery, that Mr. Jones was correct.

There being no further business, the meeting adjourned to the adjoining room, where Mr. Douglass had on exhibition Anthony's enlarging camera or lantern. This was admitted to be a very convenient and ingenious arrangement for the purpose, while its price is very reasonable. Owing, however, to insufficient notice of this feature in the evening's entertainment, there were not available any negatives of suitable size and quality to fairly test its capabilities.

The secretary would suggest to the makers that it would be an improvement to make the negative slide so that it would carry a 5x8 negative or any smaller size, whereas the specimen on exhibition would not take even a 4x5 without cutting. Another needed improvement is the substitution of a good Argand burner for the flat flame "Leader" actually used.

STATE OF ILLINOIS PHOTOGRAPHERS' ASSOCIATION.

A meeting was held at 81 State street, Tuesday evening, April 15, Mr. Joshua Smith, president, in the chair. There were about 18 persons, members and others, present.

The minutes of last meeting having been read and approved, Messrs. G. F. Gale, A. H. Gentzel and Blumenschein were elected members.

Mr. E. L. Brand, being asked by the Chair to join the association, replied that he was not quite ready to do so. He had not been present at any meeting except the preliminary one, and was not well informed as to what has taken place at the subsequent meetings. Before he placed his name on the roll of the association, he proposed to know precisely what were its objects, and see a copy of its constitution and by-laws. It seemed to him that the city photographers generally were holding aloof, and unless they could all, or nearly all, be got together nothing could be accomplished. He wanted to see those men join who have been working most injury to the profession—"those are the men we want." "I tell you, brother photographers," proceeded Mr. Brand, "these low prices are making the art unpopular. People are both able and willing to pay good prices, but they want good work; now, they get a dozen of these pictures and are thoroughly disgusted; make up their minds never to have another photograph taken.

"The mischief has been done by leading the public to believe, through advertisements in the daily papers, that as good work can be, and is, turned out at these ruinous prices as any work that can be produced by what the advertisers choose to call 'high priced' studios. But the public is getting sick of this thing, and the consequence is, that we now see this anomalous condition of affairs.—prices are lower than they ever were in the history of Chicago, and the demand for photographs is less than it has ever been. I would like those who think that low prices stimulate the demand to ponder well these facts. You cannot force any man to raise his prices, but you could accomplish something by publishing a series of resolutions. If the society would take such a stand, the tide would soon turn. Already it has turned, for it is a fact that the busiest men in the business to-day are those charging the highest prices.

"I am seriously contemplating the advisability of raising my own price to $10 for cabinets, and feel sure that I should make money by doing so. You all know that societies never found much favor with me, still, they may accomplish some good if they will set about it the right way. I shall wait to see how things pan out, and just as soon as they seem to be working favorably for higher prices I will join."

The report of committee on constitution and by-laws was now read by secretary and laid over until next regular meeting.

The subject of insurance, or benevolent fund, was now taken up and the proposed clauses relating to this matter read by secretary They amount, in brief, to a provision that each member joining the Benevolent Fund shall pay an assessment of $2 and on the death of any member the whole amount in treasury to credit of this fund shall be paid to his legatees, while a second assessment of $2 shall be made immediately on authentic information of such death. This method of proceeding to be followed in every case of death, so that there will always be money in the treasury to pay the next. Any member not paying such assessment within thirty days from receipt of notice shall forfeit all claim on the fund, but may be reinstated at any time by paying all arrears.

The Chair, in opening the discussion on this topic, considered that a State organization was better than a national one, because in the latter case they would be called on too frequently for assessments. There are probably between 400 and 500 photographers in Illinois, against 8,000 or more in the United States. Mr. Felt disagreed with the Chair on this point. With a State organization the amount payable at death would be so small as to be insignificant. Taking the Chair's figures, and supposing they got one-half the photographers in the State to join,—altogether too sanguine a view– the assessment of $2.00 would only raise $400. Whereas the same figuring applied to a national organization would yield $8,000. He was in favor of a national benevolent fund. Mr. Michle was of the same opinion.

The Chair observed that the formation of a State fund would not prevent any member joining a national one, should such a thing ever be established. At present there was no such organization, and he did not see the policy of waiting longer for it to be inaugurated. The sum named by Mr. Felt would at least pay the expenses of a handsome funeral.

Mr. Michle said he did not wish his expression of opinion to be understood as a refusal on his part to join a State fund, if established. They could count him in.

The question being put, the insurance clauses were adopted unanimously. Mr. Melander thought they were a little too hasty. Some more expression of opinion should have been obtained before voting on the question.

The executive committee was next balloted for and Messrs. Felt, Edgeworth and Miehle elected.

The secretary read the following communication:

NEW YORK, April 2, 1884.

C. GENTILE, PHOTO EDITOR OF *The Eye*: Will you insert the following in your valuable and influential paper? The object of charity presented to us is worthy of our consideration, and if brought before the photographic public in a proper way, should yield a little sum to alleviate the troubles of Mr. H. You have so many Germans out West, who will certainly give something to the poor old man.

Simultaneously I have addressed the *Times*, or the same purpose, and hope through it we may gather little money more.

If men like H. Rocher would take hold of the matter there might be success.

Yours, very respectfully,
CHAS. EHRMANN.

[From Deutsche Photographische Zeitung," Vol. III, No. 9. Weimar, 29th Febr., 1884. H. Schwier, Ed. and Pub.]

PERSONAL—"Herr Huenarjaega, a worthy old gentleman of more than 80 years of age, a pupil of Daguerre, and in all probability the oldest photographer in existence, lives now in the most indigent circumstances. Restlessly following his profession in all parts of the world, and having experienced changes of fortune from poverty to affluence repeatedly, he at last returned a few years since to his own fatherland. By being shipwrecked he lost all, and came home poor. The old man has since tried to make a living by working in some of the studios in the city of Brunswick, his native place. Advanced age and feeble health make that impossible now. The city authorities and a few colleagues have so far assisted him to a limited extent. The society for the "Cultivation of Photography" have aided him with a present of 100 MK. Withal not enough to live. We call on our colleagues to assist the old man, who thoroughly deserves, and is worthy of our sympathy. Herr A. Stormitzky, of Brunswick, and the publishers of this journal will accept contributions for which proper acknowledgments will be made."

The secretary moved that the society donate 20 marks, $5, to this charitable object. Carried.

The hat was then passed around, and $10 in addition collected from those present, making a total of $15, or 60 marks

The secretary said they all wanted to see something done about prices, but he had done his best in canvassing the city galleries on this head, and had been very insultingly received by the proprietors of some of them. He should not go around any more on this errand.

Mr. Melander thought if they waited to get all photographers in the city to join before taking any steps they would never accomplish anything. The only way is for those who have already joined to raise prices and set the example.

The secretary observed that the effect of such action would be to throw all the business into the hands of such men as Hartley.

Mr. Melander replied that this amounted to an acknowledgment that the association was a failure. They must act independently of those not in accord with them. Times were going to be good in this city the coming summer, and the moment was opportune for raising prices.

Mr. Felt thought this matter cannot be compassed by resolutions. If a rise of prices comes at all, it must come gradually.

Dr. Garrison declined to express any opinion. He had no personal interest in this matter of prices; he was interested in photography generally, and consequently in all photographers. He thought if a movement to raise prices be inaugurated, the cheap men will soon follow. An instance of the benefits of co-operation had lately come under his personal notice, in the case of the Lathers' Union—composed of mere boys. By sticking together they had succeeded in nearly doubling prices. It cost him a little more for the work on his dry-plate factory, but he did not mind that—he was glad the boys did so well.

Mr. Gale, who is located in Joliet, said a lady lately came to his place and paid him his regular price, $5, after getting some $2 work done in this city.

On motion, adjourned.

STATE MICROSCOPICAL SOCIETY OF ILLINOIS.

THE regular monthly meeting of the State Microscopical Society of Ill., was held at their rooms, No. 263 Wabash avenue, on Friday evening, April 11th, 1884.

After the routine business had been transacted Prof. E. J. Hill, of Englewood, read a very interesting paper on the Cyperaceæ (the sedges), illustrating the same by a large collection and by slides of the seeds, etc.

The committee which had been appointed to consider the advisability of publishing a microscopical journal under the auspices of the society, reported, in effect, that they thought it entirely feasible, and recommended that it be published as a continuation of the "Lens."

Mr. Fellows moved that the report be received; carried. Dr. Mercer wished to know to what extent the society would be financially responsible. Dr. H. J. Detmers stated that the society would in no way be held responsible, the publisher taking all risks.

Dr. Mercer moved that a committee of five be appointed to continue the work of the last committee and get further information; carried.

Dr. H. J. Detmers, Dr. Lester Curtis, Mr. W. H. Bullock, Mr. B. W. Thomas and Dr. F. W. Mercer were appointed such a committee.

Dr. Mercer exhibited a new photographic attachment for the microscope, designed by himself, which seemed to be perfect as a simple and convenient apparatus for taking photo-micrographs. See article by Dr. Mercer in this number.

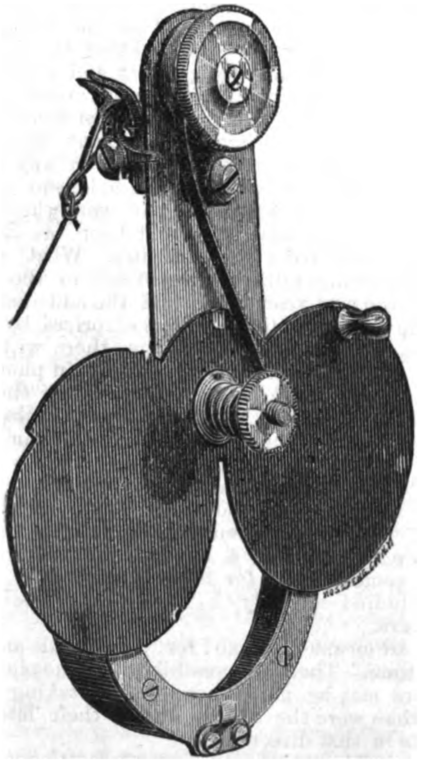
There being no further business the society adjourned to examine the specimens and slides of Prof. Hill.

Wm. Hoskins, Sec'y.

MECHANICAL APPLIANCES.

THE PROSCH SHUTTER.

We have lately subjected this new shutter to a critical examination, and propose to say a few words as to its merits and defects. And to commence with, we cannot speak too highly of the substantial and workmanlike manner in which it is got up, being in this respect a strong contrast to many of the instantaneous shutters in the market. It is entirely of brass, (except the steel watch spring which serves as motive power) is put together throughout with screws, and handsomely finished. The speed is regulated in two ways—first, by winding up more or less the watch spring above referred to, and secondly by tightening the brass spiral spring on the centre pin carrying the shutter proper; the tighter this spring is compressed the more friction is produced, consequently the more resistance to the circular movement of the shutter.



By combining these two adjustments, a considerable latitude in exposure is obtainable, while for still slower exposures it may be moved by hand. The apparatus works with surprisingly little jar, and the trigger is extremely sensitive—perhaps a trifle too sensitive. Lock nuts are provided on both centre pin and watch spring barrel, so that the two springs once adjusted to any desired tension, they are not liable to accidental derangement. A spring bolt holds shutter open for focusing when desired.

The shape of opening is such that, with the shutter in its normal position, the foreground gets much more exposure than the sky, while, as the operation of the apparatus is entirely independent of gravity, the shutter can be revolved around the lens as an axis, and adjusted to any other position, so as to bring the greatest opening opposite the least lighted part of the subject in any particular case. Finally, the whole apparatus is small and compact, and its weight by no means serious.

Now for its defects—or what appear to us as such These we conceive to be two. First, it does not admit of *very* rapid exposures. Not having subjected it to any chronometric tests, we are of course largely speaking on a guess-work basis, but think we are entirely safe in saying that one one-hundredth of a second represents the shortest exposure that could possibly be obtained with it—and the spring must be wound very tight to accomplish this.

We are well aware that many of our best instantaneous workers, among them Mr. Burnham, maintain that even this is a shorter exposure than it is ever necessary to give in making views of such subjects as they consider properly adapted to instantaneous photography, but it sometimes happens that a negative is wanted for some special purpose when a good picture is not a *sine qua non*, and where the nature of the subject precludes the possibility of giving even one one-hundredth second exposure. And when a photographer buys an expensive shutter like the Prosch (we mean expensive as compared with a simple gravity drop or rubber-band slide, for the shutter we are now criticising is sold at a very moderate price considering the excellent manner in which it is made) he naturally expects to get something which will meet all possible exigencies.

The second objection—not a very serious one—is that the shape of opening is such, that when locked open for focusing a considerable portion of the subject is obscured, necessitating the removal of the shutter bodily in order to see the whole picture at once.

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PATENT INTELLIGENCE.

3948. Joseph Julius Sachs, of 8, Union Court, Old Broad Street, in the City of London, "Improvements in the manufacture of pliable plates and surfaces as a substitute for glass for photographic and other purposes," a communication to me from Messieurs Fickeisson & Becker, resident at Villingen, Baden, Germany.

This invention relates to the manufacture of pliable plates and surfaces for various purposes. These plates or surfaces can be prepared from paper, cloth, or other suitable fabrics or materials, but, by preference, of white paper, which contains very little size, and does not possess much grain. This paper is first extended on a frame, or other arrangement, according to the size of the plate or surface which is desired. After it is dry, the surface is covered in any convenient manner with a fine varnish or composition, such as copal varnish, for the purpose of rendering the fabric transparent. It is then dried, and after it is quite dry the surface is rendered smooth by the application of powdered pumice stone or other suitable material, or it may be smoothed by suitable machinery. This process of smoothing may be repeated, if necessary, two or three times, until the surface or plate is smooth or transparent. The surface so prepared is then covered on one or both sides with a solution of gelatine or isinglass, or other substance possessing similar properties, and allowed to dry. The surface so prepared may, if desired, be further treated with a preparation of ox-gall, from which the fatty matter has been extracted by acetate of alumina or similarly acting agents, which will precipitate the fat of the gall, the resulting preparation being then passed through a filter, whereby a clear solution will be obtained, with which the plate or surface may be covered, so as to secure the safe reception of the emulsion for photographic or other use. Instead of ox-gall, any similarly acting substance or material may be used. The plates or sheets prepared as above may be used with great advantage in reproducing photographs from nature, in lines or stipples, for calico and other printing, as the stipples or lines can be printed first on the material before it is made transparent. Any photographic design or drawing can be put on the transparent surface in the usual way; and by using the said film as a negative or positive in photographing from nature or from drawing, half-tones will be reproduced in lines and stipples, available for any kind of printing. As these plates or sheets are waterproof, they can also be used as surfaces upon which can be printed or produced all kinds of ornamental and useful work. Having now described and particularly ascertained the nature of my said invention, and the manner in which the same is or may be used or carried into effect, I would observe, in conclusion, that what I consider novel and original, and therefore claim as the invention secured to me by the hereinbefore in part recited letters patent is, the manufacture of pliable plates or surfaces by treating paper or other fabric in the manner hereinbefore described.—*Photographic News.*

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TO THE PHOTOGRAPHERS OF AMERICA.

There has been so little said in the journals and so little disturbance made during the past months of '84, that possibly there may be some of you who need to be reminded that the time is fast approaching for the greatest and best convention and exhibit of photography ever held in this country. There is not the least doubt but the Cincinnati meeting will, in many ways, be more profitable and interesting, than any this, or any other society, has ever held, and it is really difficult to see how any of you, who have progress written upon your escutcheon, can afford to stay away from this meeting. What with the wonderfully rapid progress made in the art during the past year or two, and the added stimulant given by the liberal offers of prizes by our leading dry plate manufacturers, there will be shown some remarkable achievements in photography. Of course every photographer should go and be benefited by the opportunity, also of course every one should take along some samples of his work, the best he can make. And by the way, you don't know what a fine display you can make until you get about it. Try it, any way, and if you don't succeed to your entire satisfaction, be sure that is a hopeful sign, as it will leave some chance for improvement after you have studied carefully the successes and failures of others.

By all means "Hurrah! for Cincinnati and a good time." There is a possibility that the photographers may be more successful in taking the city, than were the rioters during their late attempts in that direction.

Oh! by the way, I came near forgetting to remind you that the treasury posesses still further capacity, and Treasurer Armstrong stands smiling and ready to acknowledge the receipt of dues and subscriptions from any who may have deferred the pleasure of settling up until this time. Music Hall, where the convention is to be held is a magnificent building, and will afford splendid facilities for the exhibition and the business meetings. Also Secretary Weingartner will see that nothing is left undone to make it pleasant for those who attend. J. H. KENT,

Pres. P. A. of A.

PHOTOGRAPHY.

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We hear a good deal of grumbling amongst those who subscribed liberally toward the expenses of the last convention of the P. A. of A. because no proper statement of expenditures has been made—and we must admit that the grumbling is not without cause. It will be seen from the report of last meeting of executive committee in Cincinnati, published on another page, that stock dealers are invited to "pony up" again; but we heard a few days ago that a member of one of the largest Eastern houses has stated that his firm will not contribute one cent until a full and correct statement is made of last year's expenditures, and we think we are justified in saying that similar sentiments are entertained by many others.

We are informed also by a gentleman in possession of private information in the matter, that the report of that executive committee meeting, as furnished to us by the secretary, suppresses various matters of interest to the members and to the fraternity generally, which were discussed, and rather hotly discussed, at that meeting.

There is evidently "something rotten in the state of Denmark."

◆

We notice in the *Chicago Tribune* a very garbled account of the last meeting of the Chicago Photographic Association, in which the omniscient reporter undertakes to say, "While it was admitted that Mr. Sherman had succeeded better than any other photographer who had experimented in this field, it was generally considered that the process was as yet only a matter of curiosity and not of practical utility." This suggests to us to place on record our convictions as to the advisability of inviting the daily papers to send reporters to meetings of this character. We have never yet seen a report of a photographic meeting in a daily paper that was worth the paper it covered, and we will do the *Tribune* the justice to admit that this particular report is above the average.

The reporters are a nuisance to the secretary, are always independent, frequently over-bearing and (sometimes) even insolent, and the notices they give are no benefit either to the societies or their own readers. There are, of course, exceptions to the above rule in the matter of personal behaviour, and we recently met a notable one in the case of a *Times* representative; but as to the value of the published reports, we doubt if any reservation should be made. The scientific societies can get along very well without the "Omnipotent Daily Press."

◆

We publish the following letter from a well known physician to a gentleman in this city, as one instance out of many that have recently come under our notice, of the growing interest in, and use made of, photography by the medical profession. It is our intention to make a special feature of this application of the art-science, and we invite contributions from physicians and surgeons everywhere, who have made any use of photography in their practice, especially hospital practice. We believe that a photographic record of interesting cases would be invaluable to such institutions and to the profession of medicine and surgery generally.

Dear Sir: In reply to your inquiry as to the use of photographic outfits in medicine, I would say I find mine a great benefit, I have used it in cases of skin diseases, small pox, spina befida, etc., and can see now where I should have kept photos of many cases if I had possessed it before. While in charge of Lake health department I took frequent copies of small pox cases. It is so little trouble to keep the plate holder filled and the camera in one corner of the consultation room. A photo of any case can be had at a minute's notice, the plate to be developed when convenient. I frequently take mine in the buggy when called to a case I think may be interesting and use it if opportunity offers. Nothing that I know of offers us so easy and accurate a method of recording interesting cases. Respectfully yours,

A. L. CORY, M. D.

◆

The following letter to the *English Mechanic* (April 11) we reproduce without comment:

> In your issue of March 21 you quote Dr. Garrison's paper, read at Chicago. He says, (*inter alia*) 'Ruby red glass, single thickness, offers but little protection. A plate will be heavily fogged beneath it in half a second of daylight, and in three seconds will be rendered completely black and opaque." "The same results will be obtained by artificial light (a student lamp was employed) in from thirty seconds to two minutes:" and again, "*double red with single orange* proved to be *slightly* better than double red alone," and again, "the plate after development showed that two thicknesses of glass had *rather* more thoroughly obstructed the chemical rays than was effected by the single glass. Yet the difference was *too slight to be regarded as important.*"
>
> On reading this I immediately lit my Argand gas burner in its (ordinary) flashed ruby glass chimney, turned flame on to height of four inches; also lit my Lancaster orange glass candle lamp, and placed a "Kingston Special" in front of them. After five minutes I developed it, and found perfectly clear glass.
>
> I may add that the top of the chimney was open, and showed a three-foot disc of reflected white light on ceiling.
>
> Surely "the valuable aid of Mr. S. W. Burnham" and "the untiring energy and kindness of Mr. G. A. Douglass," must have been sadly wasted; or the Americans must have some plates which are very different from ours?

We said just now that we would reprint the above without comment, but we cannot resist the temptation to ask the writer if he ever heard of such a phenomenon as *solarization*, and if his "perfectly clear glass" may not have been due to this cause?

◆

MR. W. A. FRENCH, in the April number of the *Photographic Times*, writes as follows:

"In a recent communication to the *Times* an amateur related his perplexity as to whether or not a dry plate had been exposed. There is a very simple way to find this out without spoiling a plate. Take any plate about which there is a doubt, cut off with a diamond one of the corners to the depth of one-quarter or three-eighths of an inch, and develop the small piece. If the developer has no effect upon it then without doubt the plate has not been exposed, and it can be laid aside for future use. * * * If not provided with a diamond to chip off a piece of the perplexing plate, a drop of the developer may be applied directly to one of the corners, and the effect observed equally as well."

Now, with all deference to Mr. French's superior wisdom, we venture to take exception to the foregoing remarks. In the first place, the result would not be conclusive in one case out of three. Either the corner operated on may have been exposed to such a weak light that the developer scarcely takes any effect on it, or it may have been fogged by leakage of light or otherwise. Our recommendation is to put the whole plate into the developer, and if no trace of an image appears after a reasonable length of time, wash thoroughly and dry the plate, when it can be used again with perfect safety.

If the plate fogs at all under this treatment (not having been exposed) it is proof either that your developer is too energetic, your plates foggy by nature, or your dark room light too actinic. That the plan will work successfully under proper conditions, we know by actual experiment, and good work cannot be done in any case under improper conditions.

Furthermore: Suppose a plate has been inadvertently exposed twice, and the mistake discovered, as it frequently is, before development; if the plate be immersed in a (say) ten grain solution of bichromate of potash for some considerable length of time, then thoroughly washed and dried (all these operations being conducted in the dark room) it may be used over again, but its sensitiveness is almost sure to be slightly lowered, especially if the washing has not been very complete. The same treatment will make plates work clean and bright which, owing to too much exposure to light in manufacture, will otherwise give foggy images.

◆

BY the way, why should it be deemed a virtue to take architectural views with a drop shutter? One of these days we shall have held up for our admiration an instantaneous view of a milestone taken with some patent lightning snap-drop, and shall be asked to bear witness as to its absolute sharpness. Can it be that there are enthusiasts who imagine that quick exposures were invented for the portrayal of monuments and cathedrals, and that drop-shutters are particularly useful for taking church steeples and ancient ruins? —*Photographic News.*

INSTANTANEOUS SHUTTERS.

We publish in this number a paper by Mr. P. B. Greene, describing a shutter used by him for instantaneous work, and expressing his opinions on the question of such appliances generally. It will be observed that these opinions differ widely from those of Mr. Burnham, as given in his article on the same subject in our last. Seeing that Mr. Greene is a landscape photographer of nearly thirty years' experience, his views are entitled to some weight. On the other hand, Mr. Burnham is supported by photographers — both amateur and professional—of considerable standing on the other side of the "pond;" e. g., Mr. H. Baden Pritchard, in "A Trip to the Great Sahara with a Camera," used a shutter of similar construction to Mr. Burnham's, made by Hunter & Sands, of which he says: "I do not know of any other shutter at once so simple and effective for the tourist photographer." This gentleman employed a bunch of keys set astride the drop instead of a rubber band to shorten the exposure. The fact is, this question presents different aspects according to the point of view of the invividual photographer. Messrs. Burnham and Hough, for instance, hold the opinion that a decent negative cannot be made in less than 1-50 of a second, while we know as a matter of fact that hundreds of good negatives are made every year in less than half that time. The fact is, the gentlemen just named do not attempt to make the class of subjects requiring very short exposures, and, indeed, openly state their conviction that they are not worth making. This, we venture to think, is begging the question.

Again, putting aside for the present the question of rapidity, it is a fact admitted by even the staunchest advocate of the gravity drop, that a shutter constructed on that principle gives the least time to that part of the picture which requires the most. On this subject we quote from Mr. Burnham's paper: "Some very complicated instantaneous shutters have been devised, the object of which has been to commence the exposure in the middle of the lens, and to give a little more time to the foreground, or upper part of the plate. A moment's reflection will convince anyone that these are purely theoretical considerations, of no practical importance, especially in an instantaneous, or very short exposure. In a full exposure, such as would ordinarily be made of an outdoor subject by removing the cap, doubtless the time for the lighter portion of the picture might be reduced with advantage, but as no more time is given to the foreground by any of these shutters than by the one under consideration, and as with no shutter of any form is the sky, or any part of the picture, over-exposed, it is evident nothing is really gained by any such complicated device."

Now, with all deference to Mr. Burnham's opinion, for which, in a general way, we entertain a profound respect, we nevertheless have the audacity to think he is mistaken here.

In the first place, we have seen instantaneous pictures in which the sky *was* over-exposed; but aside from this, we fail to see why the *relative* exposure suitable to different parts of the picture should be changed by the circumstance of the total time given being 1-50 second instead of 5 seconds; and, if the resulting negative proves to be a little undertimed, it is better for it to be so all over than for the sky to be fully timed and the immediate foreground much under-exposed.

But, even passing this aspect of the question, we think even Mr. Burnham himself will admit, upon reflection, that he has not stated the case quite fairly. It is not so much a question of the sky being over-timed, as of the foreground being under-timed, for, supposing the total exposure given to be, as in the case of Mr. B's shutter when operated by gravity alone, 1-16 of a second, and that this is so divided that the lower half of the plate containing the sky and distance gets $\frac{2}{3}$ of it, or 1-24 of a second, while the upper half, containing the foreground, gets $\frac{1}{3}$, or 1-48 second, it will be self-evident that if this could be reversed, giving 1-24 to the upper half, and 1-48 to the lower, while the total exposure would be the same, the foreground would receive double the exposure that it did in the former case, and we think if our esteemed friend will try this experiment he will be the first to admit that the resulting negative shows a substantial improvement.

There remains the question of "jar," or vibration, which will always be an argument against the gravity drop. It may be quite true, as maintained by the advocates of this form of shutter, that the jar occurs after the exposure is completed, and consequently does not affect the sharpness of the negative; but even granting this, it will hardly be maintained that this hammering is any benefit to the camera or lens, especially the latter. The drop must have some weight in order to fall with sufficient velocity, and its sudden arrest when it reaches the bottom produces quite a blow on the lens mount. In the "Triumph" drop shutter this objection is minimized by attaching the shutter frame to the camera front instead of the lens hood, and the intervening body of wood absorbs a good deal of the shock before it reaches the camera proper. There is one drop shutter in the market—and a high-priced one, too—which may be safely guaranteed to knock itself and possibly the lens and camera to which it is attached, to pieces in a single season's work.

The difference in "hammer" between Mr. Burnham's shutter (and that is much better than some of the gravity drops we could mention) and such a contrivance as the Prosch, which was described in our last issue, is something astonishing. The peculiar construction and extreme sensitiveness of the trigger in the latter shutter, moreover renders it impossible to disturb the camera in releasing it, but that is a point somewhat aside from the general tenor of this article, although it is partly due to the general design of the Prosch, and could hardly be attained in any gravity drop, seeing that one peculiarity of the former is that the spring does not exert its full force on the flap until after the latter has commenced to move, so that the strain on the trigger is very slight indeed.

If only moderately quick exposures are required —say not less than 1-10 second—we are not sure that a modification of the old "flap shutter" formerly supplied by Ross with his narrow-angle and ordinary-angle doublets, would not be better than the "drop" arrangement.

We presume most of our readers understand the device to which we refer, but for the benefit of those who do not, it may be said that it consists of a brass "flap," lined with velvet, hinged above the lens, and lying close against the front of lens mount when closed; it is operated by twisting between finger and thumb a milled head on one end of the hinge pin, while a similar milled head on the other end serves to clamp it open or shut, or in any intermediate position (when desired to use it as a sky shade).

It will at once be evident that, for ordinary landscape work this shutter is simply perfect in operation, seeing that the time of exposure rapidly diminishes from the extreme foreground to the highest point of visible sky; the only difficulty is to make it work quick enough for moving objects. We think, however, that a little ingenuity applied to the problem might evolve some arrangement of spring which would make it at least as rapid as a gravity drop.

SUBSTITUTES FOR GROUND GLASS.

A good substitute for finely ground glass, as a focusing screen, is often needed, especially by the out door photographer, who may be many miles, or hundreds of miles, from any place where such an article can be obtained.

The various kinds of "matt" varnish rarely give a fine enough grain; white wax dissolved in benzole is said to give a very satisfactory surface for focusing, but we have never tried it.

A piece of plain glass coated with ordinary hard negative varnish may be rubbed with flour emery and oil by means of a piece of cork, until a fine ground glass surface is produced, but it takes some time to do it, although not nearly so long as would be necessary to produce the same effect on the bare glass.

A gelatine emulsion plate, slightly exposed to light, developed and fixed, is an excellent focusing medium. But it may be wished to abolish glass altogether, and substitute some lighter and less fragile material.

For small sizes—say up to 4¼x5½—mica ground with flour emery may answer well, but it is difficult to get mica free from defects, although it can be obtained of suitable quality; and for sizes larger than the above it would hardly be stiff enough, even if it could be obtained sufficiently homogeneous and transparent.

There is a kind of tracing paper in the market, known as "French vegetable" which, optically leaves little to be desired, but as it possesses no stiffness, it must be damped and pasted on a frame to make it "taut." Care is required not to make it too wet, or it will split in drying. It may be stretched on glass by wetting it and pasting the edges.

Tracing cloth has been used, but it is not sufficiently transparent and its grain is too coarse. We have an idea that the fine oiled silk sold for surgical purposes might make a good focusing screen, if stretched on a frame, but have never tried it.

A CORRESPONDENT in the *English Mechanic* mentions an instantaneous picture made of the "Flying Dutchman" when running sixty-five miles an hour, in which the nuts on cylinder heads were plainly visible. The lens used was a single combination.

A NEW DRY PLATE HOLDER AND EXPOSING CASE.

BY PROFESSOR G. W. HOUGH.

The amateur photographer in the early stages of his career has perhaps spoiled a large percentage of his plates by fogging—sometimes due to carelessness, but more frequently to a want of knowledge regarding the capabilities of his apparatus.

The camera, with the plate holder attached, is presumed to be light-tight, but very often is not. The two weak points are the sliding front and the junction of the holder with the camera. By holding it up to direct sunlight and alternately looking in from front and rear, any defect will be detected.

The ordinary double or single plate-holder, which is operated by drawing a slide, is a very uncertain piece of apparatus for out-door work. When the holder is closed the plate is protected, but so soon as the slide is put in motion there is great danger that light will enter and impair or totally spoil the negative. Many double plate-holders are supposed to be protected by means of a strip of metal pressed by a spring against the side of the slide nearest the plate, while the side next the camera has no protection. This device is practically of but little use for preventing the entrance of light. The construction of any form of slide, which shall be safe in direct sunlight, presents many mechanical difficulties.

Any one who will perform the following experiment, will be surprised at the amount of light which may enter the camera in the act of drawing the slide.

Remove the lens, cover up the head with the dark cloth and then hold the camera with the slit toward the sun and work the slide back and forth. Repeat the experiment by gradually changing the position of the camera with reference to the sun. Afterward you will feel it desirable to put a light-tight bag over the whole apparatus whenever you make an exposure.

I am now speaking of out-door work, where the light is some hundreds of times more intense than in an ordinary room.

As most of the work of the amateur is done out of doors, in light where a negative may be made in the fraction of a second, every possible precaution must be taken to prevent fog.

Nearly two years since it occurred to me that a more certain and convenient method of exposing a dry plate could be devised, and a rough model was then constructed similar to that about to be described.

The plate holder (Figs. 1 & 3), shown partially open, consists of a rectangular box, B, made of cardboard, tin or brass, preferably the former. In the bottom of the box is glued a strip of wood half an inch in width, in which is inserted a small machine screw, S, which projects outside about an eighth of an inch. The carrier, C, for holding the plate, is made of one piece of tin, with flanges on the sides, the middle being cut out in order to form a spring, which brings the film side of the plate always in the same position as in an ordinary holder. By making the carrier as indicated, economy of space is secured.

The smaller size of plates may also readily be exposed by inserting an extra carrier made of tin-type plate, the plate being held in the middle of the field. This method of holding small plates was designed by Mr. S. W. Burnham, and is an important feature, as for a good deal of experimental work they answer the purpose of full size plates.

The case is specially adapted for outdoor work, and will probably answer for plates as large as 8x 10 without any modification.

The carrier, C, is attached to a rectangular block of wood, A, (Fig 3), by allowing projections in either end to pass through, when they are bent down and clinched. The block, A, projects above the mouth of the box, B, forming a light breaker; an additional security is also obtained by the strip of wood, D, which enters the mouth of the box when closed.

For a 4x5 plate the dimensions of the plate holder are as follows: Length, 6¾ inches; width, 4¼ inches; thickness, ¼ inch. When the cover, B, is made of tin instead of cardboard, the thickness is only 3-16 inch, the other dimensions remaining the same.

One dozen of these cases, holding 4x5 plates, are easily carried in one's pocket. To prevent accident they, they may be kept securely closed by a rubber band. Mr. S. W. Burnham, however, has invented a very neat lock, which is entirely automatic in its action, being opened and closed in the act of exposing the plate. It consists of a tongue of spring brass attached to the under side of the cover, B, which enters a pin set in the middle of the block, A.

The exposing case (Fig. 1,2,3,4), is, a rectangular box, EF, made in two parts for convenience, being hinged near the middle so that it can be readily doubled up to render it more portable. It is rigidly held in the position shown in the sketch by

HOUGH'S IMPROVED DRY PLATE HOLDER.

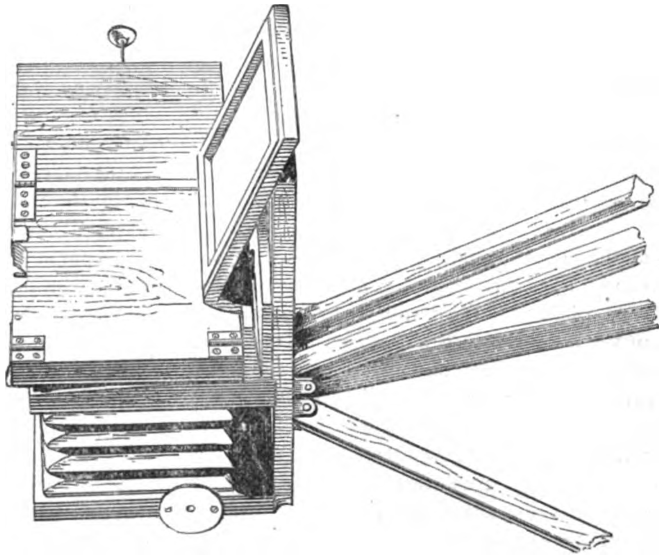
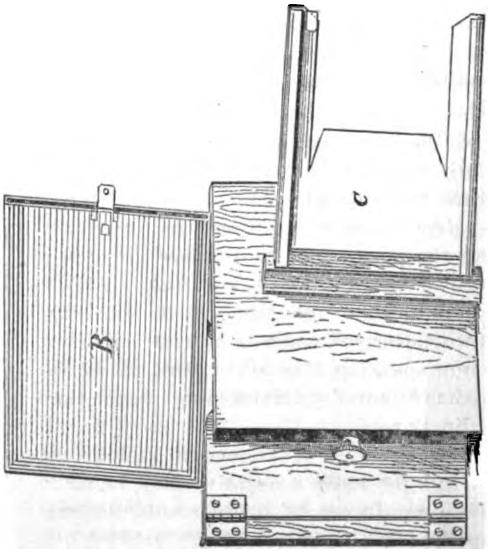


Fig. 4.



Fig,

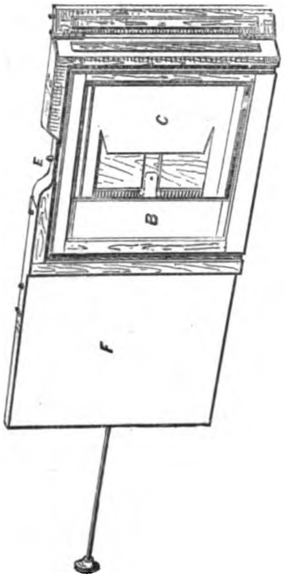


Fig. 1.

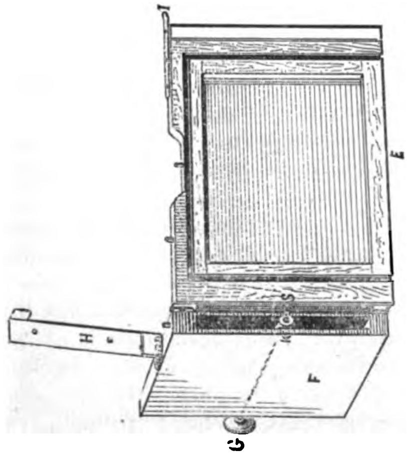


Fig. 2.

means of a long hinge, H, on the top of it, and is attached to the camera in the same manner as a double plate holder. In order to secure greater security against the entrance of light, an outside flange is added where it joins the camera.

At the left hand side is a hinged door, I, through which the plate holder is inserted.

In the cut a plate holder is shown partially in the case. In the dark chamber, F, is inserted a draw rod, G, terminating in a milled head on the outside, and having a cylindrical nut, K, inside for securing the screw, S.

To make an exposure we proceed as follows:

The door, I, is opened and a plate holder inserted. When the door is closed, the rod, G, is pushed in to meet the screw, S; one or two turns being sufficient to secure it. It is then drawn out as far as it will go. Removing the cover, B, to the chamber, F, leaving the carrier, C, holding the plate in the camera ready for exposure.

The rear end of carrier, C. is held in position by the block, A, accurately fitting the case, and the front end is supported by the cover, B, which is not entirely removed.

After the exposure has been made. the door, I, is opened, the rod, G, is unscrewed, and the plate holder pushed out by pushing in the rod, G, which is made long enough for that purpose.

The cover, B, is drawn as easily as a slide, and since in the act of drawing it is constantly in a dark chamber, it is not necessary to cover the holder with a cloth, and an exposure may be made in the sun without danger of fog.

In Fig. 3 the exposing case is shown attached to the camera ready for making an exposure. The distinctive features of this method consist, first, in having a compact and light-proof holder for carrying the plate; second, in inserting this holder in a suitable case and drawing the *cover* in a dark chamber. By this plan all danger of fog in making an exposure is entirely obviated.

Some interesting experiments have been made to test the plate-holders with regard to their ability to protect the plate under all ordinary conditions. In removing the holder from the camera, the cover was accidentally drawn so as to expose one end of the plate to the light of the sky, but on developing, there was no evidence of fog except on the portion exposed. As I supposed the whole plate would be spoiled, I determined to repeat the experiment. After an exposure was made, the cover was intentionally drawn so as to expose a portion of the plate, but on developing no evidence of fog was shown on balance of the plate.

It would appear from these experiments that the cover being made to approach so closely to the surface of the plate, acts as a dark chamber; the light within being of many hundred times less intensity than that of the sky.

The cardboard holders are inexpensive, and it is easier to carry a dozen plates in them than three double holders of the usual pattern.

It is adapted for cameras already in use, though in the construction of new ones it may form part of the camera itself; the dark chamber, F, being hinged for convenience in transportation.

In using this apparatus, it would be more convenient if the ground glass focusing-screen could be dispensed with, so as to leave the case constantly attached to the camera during an expedition. This may be accomplished in various ways:

First.—By fixing the ground glass in the back of the exposing case.

Second.—By a movable ground glass in the back of the exposing case, which may readily be brought in the plane of the plate.

Third.—By putting the ground glass in a regular carrier, *c*, and inserting it the same as a plate.

In either case it is necessary to cut a hole in the back of the exposing case and cover it with a door or slide.

Mr. S. W. Burnham has designed a very satisfactory piece of mechanism for the second method, but it necessarily makes the apparatus more complicated. The third was the suggestion of Prof. H. D. Garrison.

I have tried the first and third methods, either of which work well, without seriously affecting the simplicity of the apparatus. When the ground glass is fixed, however, in the back of the case, it is not in focus for the plate, and it is necessary to make an adjustment after focusing. This is not a serious objection, however, as every amateur will soon learn to mark his focus for infinite distance, at which mark nine-tenths of all his outdoor pictures must be taken.

It may be added that the first method has proved eminently satisfactory in practice.

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PHOTOGRAPHY is gradually becoming of indispensable assistance to artists, more especially to those engaged on illustrations for periodicals. Only the other day one of the best known draughtsmen of animals expressed his intention of taking lessons, as he found many of his brethren made use of photography to great advantage. —*Photographic News.*

APPLICATIONS OF PHOTOGRAPHY IN SURGERY.

BY C. E. WEBSTER, M. D.

Several years ago an acquaintance, then studying dentistry, thought that he would try the experiment of taking a plaster cast of his arm. How was it to be done? "It's easy enough," said a friend; "rest your arm flat on the table thus, and I will pour the plaster over it." "But," said the dentist, "How shall I get my arm out of the mold?" "Straighten it and the plaster will break," was the reply, "and afterward you can fit the pieces together and take the cast." "Won't it stick to my arm?" "I will prevent that by greasing it," said the accommodating friend. So the brawny arm, well rubbed with olive oil, was laid with clenched fist and flexed elbow upon the table, and as the creamy plaster was being poured over its hairy surface, my acquaintance complacently reflected on what a striking object it would be as an ornament tohis office, for it was a well formed arm and certainly in quite a striking attitude. His pleasant dreams awoke to sad reality when the plaster set, for not only was it impossible to straighten out the arm and thus crack the mold, but after the hammer had been vigorously applied for that purpose it was found that each individual hair was so firmly imbedded in its gypsum envelope that it would sooner leave the flesh than come out of the plaster. So, mid imprecations and blood the fragments were removed. His pains were rewarded by a more complete success than had been anticipated, for on fitting the parts of the mold and taking the cast, which was slightly tinted pink, it was discovered that the bulbs of the hair held more strongly to the cast than their tapering ends did to the mold, and the result was a lifelike reproduction of the arm, ornamented with its own natural appendages.

The incident illustrates one of the many practical difficulties in the way of taking models of portions of the body, and suggests the desirability of other methods whenever possible. The difficulties can be overcome, and I have taken admirable casts of hairy parts without either shaving the hair or hurting the patient; still a good cast is not an easy thing to make. It tries a sick person greatly. It can't be done in a hurry, and requires skill and experience in the manipulation of plaster. Drawings are unreliable and hard to make. Outlines taken from shadows or with flexible metal strips are good as far as they go. But in photography we find a ready means of recording the outlines and surface features of a particular region or of the whole body with little trouble to ourselves, little expense, and no inconvenience to the patient.

Whenever it is not absolutely necessary to preserve in a rigid material a pattern of the inequalities of the surface, a photograph will be found to be a perfectly satisfactory record. That is to say, where rigid apparatus is to be made a cast may be necessary, but when the appearances of diseased or injured parts or diseased growths, or where the measurements and proportions of a part are to be taken for the manufacture of some simple piece of apparatus, photography is to be preferred to any means in use. When the color is important the photograph can be tinted or used as an outline from which to make a perfectly accurate painting.

We may consider its applications in surgery as a means of recording facts, of establishing diagnosis and of assisting treatment.

In the progress of any science the accurate recording of the facts on which that science rests is of first importance. This record should be complete even to the most trivial detail, for it often occurs that what has at first appeared a minor point, shows itself to be on more extended research a constant characteristic. Photography records impartially that which is important and that which is thought to be trivial. It is particularly adapted for recording outlines, as in deformities of the limbs, the general appearance of solid parts, as tumors, dislocations or fractures. surface markings, as in diseases of the skin, and lastly, in those conditions that affect the personal appearance or attitudes of the patient, where description is impossible and the highest artistic skill necessary for truthful drawing.

It is unnecessary to enumerate the diseases that may be included under these headings

There is probably no disease, some feature of which might not be better recorded for comparison and study by photography than by any other method. I may mention in illustration bow legs, cancers and other tumors, the various varieties of eczema and the facial expression in certain kinds of paralysis or varieties of insanity.

A diagnosis can best be reached in many slowly progressive diseases by a careful noting of the successive changes which occur in the early stages of the case. Thus in progressive muscular atrophy the changes are very gradual, affecting a few muscles, which, slowly wasting, finally leave depressions in place of their former prominences. Photographs taken at intervals in the early stage of the disease would much more accurately measure its progress than can be done by the eye, and render, in doubtful cases, the diagnosis much more positive. The art is also applicable to slowly progressive deformities, as in curvatures of the spine, where the comparison of photographs on the same scale would give the best possible means of estimating the changes taking place and thus give valuable hints to the surgeon as to the best method of treatment.

The art is useful in the treatment of certain diseases. Thus in deformities where apparatus is necessary a good photograph may supplement or render unnecessary a plaster cast. I have found the following method useful. Photograph the patient in various positions with a scale of inches or centimeters in the field, thus enabling the mechanic, while constructing the apparatus, to measure directly from the picture the proportions of the various parts, rendering the subsequent fitting and adjustment quite a simple matter.

Photography can be used to deceive as well as to enlighten. I recollect two pictures representing a case of spinal curvature. In one the shadows are so arranged as to exaggerate the curve and the body so turned that the tip of the farther shoulder blade puts an extra point to the real deformity. In the other, which is to illustrate the benefits of treatment all this is reversed. Strong lights obliterate minor features and the position is such as to render the curves as inconspicuous as possible.

I trust that these hurried and incomplete notes may serve to call to the minds of physicians and photographers the advantage of their mutual relations. If a surgeon has sufficient need of it, an amateur outfit will be exceedingly useful, if not, he should make an arrangement with a photographer whereby the various valuable observations of his professional life shall not perish with his memory but be preserved to form a part of that great common fund of knowledge which gives the stable foundation of our art.

Often an honest photograph is the best statement of a patient's case. Here we find the *chief* use of photography to medical science.

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WHY on earth do apparatus-makers manufacture instantaneous cameras in the form of gun or pistol? Of all things in the world that render their owners the objects of suspicion, sure firearms are the worst. M. Enjalbert has now an improved photo-revolver, which is said to be of most ingenious construction, as we are quite willing to believe; but who is going to carry such an instrument? Peaceful citizens have a wholesome dread of anything in the shape of a revolver, and although the little camera will do them no harm, it may bring down mischief on the head of the unfortunate photographer. It is all very well to go skylarking about with a mock sort of pistol of this kind, but one fine day a fellow-creature may misinterpret your motive, and it is always difficult to explain matters after you have been knocked down.

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It is well known that hitherto chemical tests have been generally relied upon for the detection of alterations and forgeries in such documents as checks and bills. It appears that another of the natural sciences, optics, may be more safely depended upon. The Bank of France has almost entirely abandoned chemical tests in favor of the camera for detecting forgeries. The sensitive plate not only proclaims forthwith the doing of the eraser or penknife, but frequently shows under the bold figures of the forger, the sum originally borne by the check. So ready is the camera to detect ink marks that a *carte de visite* enclosed in a letter may, to the eye, appear without blemish, while a copy of it in the camera will probably exhibit traces of writing across the face, where it has merely been in contact with the written page.

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THE original Bolas detective camera, it will be remembered, was in the form of a boot-black's block, and few objects answer so well to diguise the camera. The notion of employing the opera-glass form is not a bad one, but you naturally look like prying when you hold it up, and thus, if your object is to get a photograph unawares, this is at once detected. A black bag, a brown paper parcel, or some ordinary portable object, is the form a detective camera should assume, and there is little doubt that the first manufacturer who fulfils the conditions satisfactorily will find a ready sale for his apparatus; for pictures of every-day life can only be properly secured when the presence of the photographer is unknown.

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A NOVEL use of photographic negatives came under our notice the other day. A lady desiring the portrait of a relative, whom she knew had been photographed in a town in the south of France, went in search of the studio. She found it after some trouble, but she found also that the photographer had disposed of his business to somebody in another profession, who had utilized the old negatives to glaze a greenhouse! Fortunately the required portrait was discovered among a pile of negatives upon which the hands of the glazier had not been laid.—*Photographic News.*

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IN our next we shall publish an illustrated article on "Photography in Jurisprudence," by Dr. Belfield.

PHOTOGRAPHY IN PRISONS.

BY S. W. WETMORE.

Recording Clerk and Photographer, Illinois State Penitentiary Joliet, Ills.

For some years past, the subject of photography as a means of ferreting out crime, and of producing an unfailing record for the aid of officers of the law, in the identification of habitual or professional criminals, has attracted considerable attention from police and prison authorities. But or some cause they have failed to generally adopt it as an aid. Now that the dry plate process of taking pictures has been so simplified, the police department or prison that does not adopt photography as a means of adding valuable information to its system of records, must soon consider itself as far behind the times. Every well equipped police station and place of imprisonment could at small expense have its own photographer.

During a period of ten years past, I have recorded upon the register of the Joliet penitentiary, the descriptions of over eight thousand criminals or convicts that have been received at that institution during that time.

The description of a prisoner as now taken at Joliet is a very complete affair, giving not only his general appearance, color of hair, eyes and complexion, but goes into the smallest details, showing the location and number of moles, scars, India ink marks or designs, every peculiarity of feature and build, shape of nose, mouth and head, all being carefully written out by the officer that receives the new convict. The officer who has once known the criminal as a convict, can be pretty sure of being able to identify him years afterward, provided he can get a copy of the prison descriptive list to refer to.

But complete as is the system of the prison records and descriptions, there has always seemed to me to be something lacking to make it absolutely correct and a sure means for the future identification of the criminal, and that something was a photograph.

Heretofore it has been almost an impossibility to have it done by a regular photographer; the expense and trouble would be too great.

When my attention was first called to dry plate photography it struck me at once as being the very thing wanted. A grand thing for penitentiaries and penal institutions, the great homes of society's malefactors.

It took me several years to convince the authorities of Joliet prison that a photographer's outfit was a real necessity to the institution. They thought it would be a fine thing to have a picture of each convict that entered the prison, but imagined it would be an impossible thing to do, the convicts would object, and it would cause great trouble and expense. One old prison officer said to me, "What! take the pictures of convicts? It cannot be done. You would have a fine time taking the mugs of the 'old timers,' wouldn't ye?" Another officer who had spent all his life in handling criminals, said: "When I was on the Chicago police force I was often detailed to accompany the squad that went to the photographer's to have the pictures of some hard cases taken for the rogues' gallery, and I've seen them try for a whole hour to get the picture of one man, he would run out his tongue, squint his eyes, twist his mouth and blow out his cheeks, making all kinds of contortions, and even when we put the "come-alongs" on him and twisted them up until he yelled with pain, he would'nt give in. The only way you can successfully photograph the hard ones is to catch them when they are asleep; although I once saw two central office detectives administer chloroform to Paddy Kent, a St. Louis crook, and they got his picture in that way, but it looked like the picture of a corpse. I remember one day, when a notorious Cleveland thief named Joe Dubuque was taken over to the artist to have his picture taken to adorn the central office Rogue's gallery. Joe went along as meek as a lamb, never offered a word of objection, but the moment the artist uncapped the lens, Joe sprang from his seat and kicked a hole clear through the side of the camera, and before we could get hold of him again, he had succeeded in putting an elegant head on the photographer." Such stories and experiences as related above, made me doubt the practicability of prison photography, yet I contended that there was a great difference between an unconvicted criminal and one wearing the stripes behind the bars. The whole demeanor and bearing of a man changed from the moment that he heard the great iron door clang to behind him as he entered the prison to serve his sentence; previous to his coming, he was bold and defiant, but when his person was covered with the zebra suit, his nerve left him; then he was but a mere machine ready to obey and do the bidding of those in authority—the hardest of criminals becoming timid and nervous on their first entrance into prison, not knowing what fate might be in store for them in the dreary life behind the prison walls.

Outside, the professional crook would not permit any artist to copy his features. The villain would stand six months in the bridewell, or live on county jail diet for weeks, or even accept a five years' term in the penitentiary, but the hardest steps in his whole criminal career would be to sit still and have his "phiz" taken, knowing that it would be placed in every prominent Rogues' gallery in the country.

I believed I could make a success of prison photography, and agitated the subject until the authorities finally gave me permission to order an outfit and try the experiment. I knew nothing about the art or what sort of an apparatus was necessary for our purpose. I sent to New York for Anthony's catalogue and from it selected a cheap 5x8 amateur outfit,—something entirely unsuited for the purpose,–but I found that out soon enough. I received the outfit in December last and at once commenced to study up dry plates, chemicals, developers and processes. I exposed plates on every person about the warden's house and in the course of a few weeks considered myself far enough advanced in the art to attempt taking pictures of the convicts. The warden suggested January 1, 1884, as a good time to commence, and if I made a success of it that we would take a picture of every new arrival after that date.

On January 3, the regular monthly delegation of convicted felons came down from Chicago. The gang consisted of twenty-three men, among whom were some of the hardest cases that ever entered the prison, several fourth and fifth termers among them, criminals that have known the interiors of half the jails and prisons in the country.

After the new recruits had been fully initiated into the stripes, I had my outfit conveyed to a small building standing in the center of the prison yard, where I could utilize a side light and screen. The twenty-three men were marched into the room and seated. I saw a queer look flash into the faces of the men, the moment they saw my camera and began to realize why they were brought there. A dozen curious guards were on hand to witness the expected circus, which they had predicted would occur when I attempted to take the pictures.

I had provided a couple of citizens' coats to be put on by the convicts when their pictures were to be taken, and when the first man was called up, and ordered to remove his striped jacket and put on the citizen's coat, I imagined that the other convicts, who were intently watching proceedings, felt relieved when they found out that their pictures was to be taken in citizens' dress and not the striped prison garb. John W. Pallson was my first sitter, a notorious burglar, this being his sixth term at Joliet prison. The coat was buttoned well up to his chin to hide the striped vest and shirt beneath, and he was seated before the camera. I was decidedly nervous myself, not knowing what might be the result and came very near knocking the instrument over while trying to get a focus on Pallson's ugly mug. From beneath the black cloth I could see that he was in no good humor, his face wearing an awful scowl, and seemed as if he was contemplating the idea of kicking my instrument into the middle of next week. I finally got the slide drawn, and directed the convict to keep his eyes on a bit of paper I had placed on the wall,then I uncapped the lens,counted ten seconds, and replaced the cap. The deed was done, the convict had not even winked during the exposure. All my nerve came back. I called up the next victim, a diminutive red-haired customer with a hard record, but he took his dose of dry plate like a little man, and never kicked. In forty minutes I had exposed plates on the whole gang and saw them march away to the solitary prison, to meditate over their fates. The guards who had said it would be an impossibility to successfully photograph the convicts, had also silently stolen away without a word to say, while I was left there monarch of the ranch with twenty-three undeveloped plates in my holders. My convict assistant packed up the outfit and we made double quick time to the warden's house where my dark room is located.

My first batch of portraits was pretty fair, and considered good for a beginner. When the prints were ready I mounted them in the "Prison Album," which is a large book, made with sheets of card-board for leaves, and substantially bound; each page is ruled off into twenty squares, each square to contain a print and below it the prison registered number of the convict. No names appear in the book. An average of 700 convicts are received at Joliet prison annually and when this album is completed it will contain the pictures of over two thousand criminals. The negatives are filed away in preservers and kept for future use. Should a convict escape, hundreds of his pictures would be sent in all directions for his recapture, and on the back of each card would be printed the description of the man with an offer of fifty dollars reward for his capture.

The "Prison Album" of the Joliet penitentiary is destined to become one of the greatest Rogues galleries in the world. It already contains the pictures of nearly 300 men who have entered the prison this year. S. W. WETMORE.

AN INSTANTANEOUS SHUTTER.

BY P. B. GREENE.

In the April No. of the *Photographic Times*, is an article by the editor on the place to put the shutter. According to his theory, after summing up all the pros and cons, he concludes the best place is close to the sensitive plate. I shall in this article attempt to show that there is a better place for the shutter. Also in the first number of PHOTOGRAPHY is an illustrated article entitled "A Common Sense Shutter," by Prof. S. W. Burnham. This shutter is simple in construction, and I think it the best of any of the gravity shutters. The form of the opening is such that on long plates it gives more time to the ends of the plate, but for a square plate a square opening would be just as good. But the trouble with all of these shutters is, that they give the longest time to the sky, the lightest part of the view, and the shortest to the foreground, or the darkest part of the view.

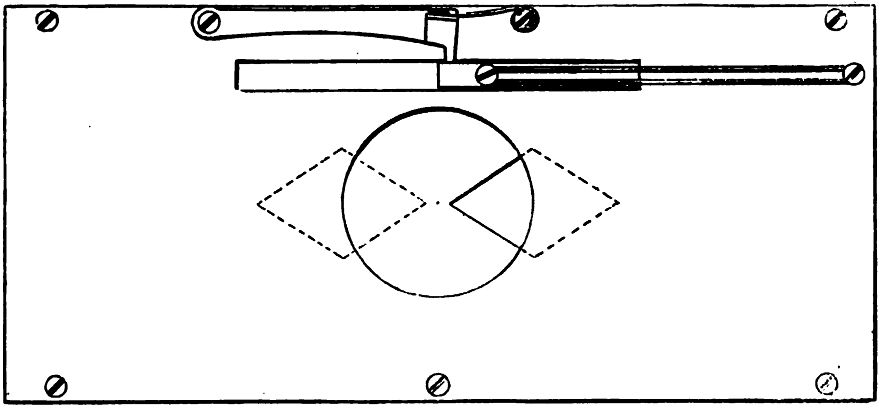
Now what I claim for my shutter—the one I exhibited at the April meeting of the Chicago Amateur Club,—is that it is a central opener. Being placed close to the stop in the lens it covers the whole of the plate all the time from the commencement to the close of the exposure. It also acts as a stop to give sharpness to the margins and the distant portions of the view, and while wide open it floods the plate with light, tones down the hard lines, and gives atmosphere to the picture, which no other shutter can do. The shutter which I exhibited was made for a single view lens and fits on the mount just in front of the stop. For a doublet or a portrait lens it should work between the lenses just forward or back of the diaphragm. If the opticians who manufacture our lenses would put the shutters in they would answer both as shutters and stops.

As the bromo-gelatine dry plates are so rapid, the opticians will have to furnish us with some means whereby we can be sure of our exposure. While this shutter works with a spring for instantaneous views, it can be worked by hand just as well when you wish to make a longer exposure, by detaching the spring, throwing it wide open and letting it remain so as long as you like.

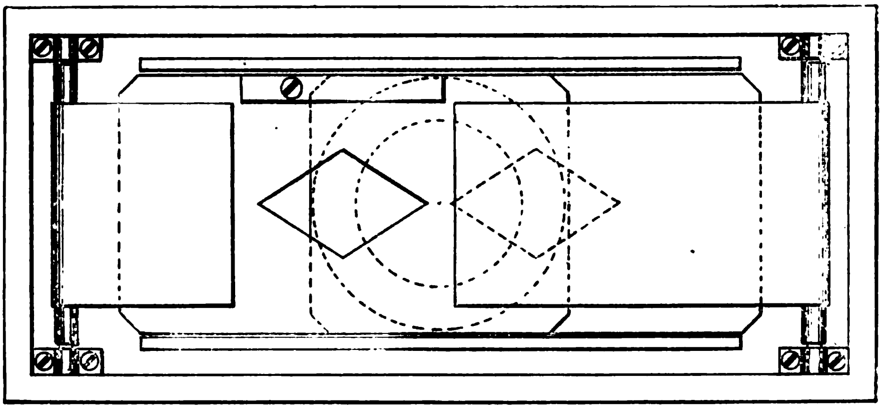
The objection to it because it works with a spring I consider groundless. You might as well object to a watch or a clock because they have springs to make them run. Some people might prefer to ride in a carriage without springs because a spring might break once in a while. I do not claim to be the inventor of this kind of shutter. You will find a description of one very nearly like it in the *British Journal Photographic Almanac* for 1880, by Rev. Canon Beechey, where he says he has used the shutter in his lantern for dissolving views, for the last thirty years. See also Messrs. Hunter & Sands' shutter in *Photographic News Almanac* for 1882. And again in the *British Journal Almanac* for 1884, by W. J. Stillman. I would also call the attention of the photographer to an article by Leon Vidal, in the *Photographic News Almanac*, for 1884, page 51. This article explains the effect of the drop shutter, showing the unequal lighting of the plate. What I claim for my shutter is: when placed close to the stops it gives sharper and better defined pictures without being hard, with good atmospheric effect, and at the same time the plate is exposed all over alike. It is true you will have to cut the mount of the lens to permit of the slides passing between the lenses for a doublet or portrait lens.

The construction of my shutter is so well indicated by the drawings that little description is necessary. It consists of two flat plates of metal, hard rubber, or heavy cardboard, each with a diamond shaped opening in the center, and connected together at both ends by a flexible band passing around rollers, which revolve in brass bearings attached by screws to the corners of outside case. A strip of wood attached to the front slide by glue, or screws, or both, according to the material of which the slide is made, projects through a slot about twice its own length in the front cover, and has a rubber band or bands attached to it in the manner shown. It will be evident that the full opening of the diamond is presented only at the instant when the two openings are exactly opposite, and that the aperture gradually increases from a point and decreases to a point again. By varying the number or size of the rubber bands considerable variation in speed can be attained, or it may be operated by hand, removing the rubber entirely. A coiled brass spring could be substituted if preferred. A slight modification in trigger would enable it to be released by a straight pull from behind camera as in Mr. Burnham's shutter. By making the en-

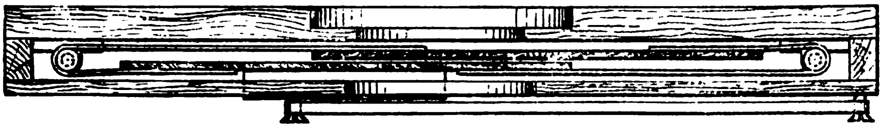
GREENE'S INSTANTANEOUS SHUTTER.



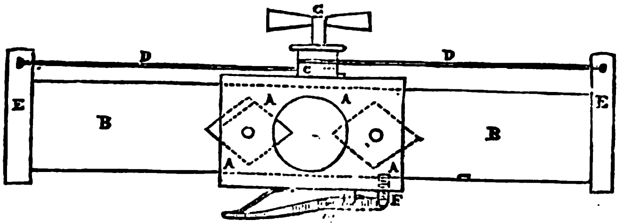
FRONT VIEW COMPLETE



VIEW WITH FRONT COVER REMOVED



SECTIONAL PLAN



W. J. STILLMAN'S SHUTTER.

tire shutter of brass it could be made much thinner and some smaller every way, and of course somewhat more durable. But my aim has been to show how such a contrivance may be cheaply made, and by the photographer himself if he is at all handy at such work; old cigar boxes will furnish the necessary lumber and a very heavy press-board will answer admirably for the slides; for the flexible bands thin leather will be the best,—in fact the bands and slides could all be made of one piece of leather of suitable thickness, and I am not sure but this would be the best arrangement. The rollers can be made of heavy brass or iron wire if nothing more convenient is at hand.

Rain Band Spectroscopy Attacked Again.

I have just had the honor of receiving a copy of an essay read before the Philosophical Society, Washington, D. C., and printed in the *American Journal of Science* for the present month, wherein I read:

> "The results of observation with the rain band spectroscope are now called in question by many prominent metereologists. In fact, the unsatisfactory nature of the evidence may be easily shown to the satisfaction of any one possessing an instrument.
>
> If the spectroscope is first turned to the sky in any direction and afterwards to a white wall 50 feet distant it will be impossible to distinguish between the appearance of the rain band as shown by the whole atmosphere and by the layer 50 feet thick."

If this be the most damaging accusation that can be brought up after the memorable correspondence in both *Nature* and the *Times* in the Autumn of 1882, there is hope of converting the "prominent meteorologists" yet. For cannot they as well as other men, see that a white wall close to an observer in daylight, necessarily reflects the light, and with that the spectrum, of the sky which is illumining it, solar lines, telluric lines and all? Or if the worthy gentlemen still doubt, let them illumine their white wall at midnight with policemen's lanterns or Swan's incandescent lamps, and then I can promise them they will get out of it and the "layer of air 50 feet thick" in front of it, neither solar lines nor telluric lines in any kind of weather.

C. Piazzi Smith.

—*Nature.* 15 Royal Terrace, Edinburgh.

The height and velocity of clouds may be determined by means of photography. Two cameras are placed 600 feet apart and provided with instantaneous shutters which are released at the same moment. The angle of inclination of the cameras and the position of the cloud as photographed are thus obtained, and simple trigonomical operations give the height and distance from those data.

Photography in Hospitals.

Most of the French hospitals have now a photographic studio attached, for photographing the sick persons at different times. The rapid dryplate process is employed, and Professor Charcot of the Salpetrière has devised an electrically operated camera, which is very useful in taking a series of views in rapid succession. Certain classes of patients are photographed on their entry into the hospital, and at regular intervals after. In cases of hysteria, for example, it is interesting to note the original contractions, and compare them with succeeding ones. The photographs are placed in an album for study of the disease, and for comparison with others taken from other patients. In this way the leading features of the disease will be recognized. The new printing processes also enable these photographs to be copied, and distributed to other hospitals and medical men.

Micro-photography, or the photographing of microscopic objects, is also a valuable branch of hospital work, which is becoming better recognized every day. The apparatus of Professor Charcot consists of a camera with a movable aluminium shutter controlled by an electro-magnet and clock-work. A key and battery send an electric current through the magnet at the will of the operator, and, working the shutter, expose a plate to the object. The photographer controls the apparatus by hand, and, with his fingers on the key, watches the patient until the desired moment arrives, then he presses his finger, and exposes the plate for the instant required to take the likeness. When a regular series of views in rapid succession are required, the hand key is replaced by an insulating barrel set round with metal contact pieces, like a commutator, and these pieces make contact with a contact spring as the barrel revolves by clock-work. These metallic pieces are made of a triangular form; so that, when a short exposure is required, the spring is placed so as to rub over them toward their apices, and when a longer exposure is required, it is caused to rub over them near the bases. The metronome, or automatic mercury current interrupter of M. Gaiffe, is also applicable to this camera as an automatic key.—*Popular Science News*, May, 1884.

M. Montagna, editor of the *Revista Fotografica*, lately sent a receipt for photocaleography to the French Photographical Society. He thinks that it may be applied with advantage to photo-engraving purposes. A plate of properly grained tin is placed on a glass; a gelatine relief is placed on the grained side of the plate, as in the Woodbury process; then a second glass, very even, is placed over the whole, and high pressure used. The relief penetrates more or less deeply into the tin, and a plate is formed, which can be used for photo-engraving.

The publication of Prof. Bastin's very interesting paper on "Starved Rock and Vicinity," is unavoidably postponed until next issue.

ELECTRIC LIGHT PORTRAITURE.

A PAPER READ BEFORE THE CHICAGO PHOTOGRAPHIC ASSOCIATION, MAY 7, 1884.

BY MR. G H SHERMAN.

Mr. President and Gentlemen:

The subject before us to night might well have been assigned to better hands, but I will do as well as I can to entertain you, and give you my method of using the electric light in photographic portraiture. I have had electric light on the brain, as it were, for a year or more, and having seen it established as a general illuminator in our little city of Elgin I thought I would try it on negative making. I had talked with several who had used the light to some extent, and all thought it would do, but it was quite expensive, some parties having expended several thousand dollars in the experiment.

After witnessing the demonstration at Milwaukee last August, and having seen some of the work from other sources, I felt a little discouraged, but still I was bound to see what I could do with one light. I got no expensive plant—merely one light from a circuit of thirty lamps used in our stores. The lamp is of 2,000 candle power, of the Van Depoele system, for which I pay $12 50 per month. So you see that I hazarded very little in the trial. I have as yet attempted nothing but bust and half form, as my arrangement of the light is more adapted to these styles.

I will now give you a description of my mode of operating. We will begin with the light, which, as I said before, is one of the Van Depoele lamps, suspended near the center of my reception room. It is arranged with cord and pulley, so as to be raised and lowered to any elevation. I use a large, ground-glass globe. I wish to say in this connection that, as far as my experience and observation goes, I think the Van Depoele light is the best for photographic uses. We next have a circular concave reflecting screen of fine white muslin. This is also fixed to a standard, and made adjustable to any height and angle. This I place within a foot of my lamp. I also have a mirror about 16x24 made adjustable. Next are my screens, etc. On the side next my lamp I have a screen of white muslin, 7x8 feet,. In the center and near the top is an open space, 2x3 feet, which I fill with one or two thicknesses of blue gauze. This softens and diffuses the light. In the center of this gauze I place an oval piece of white tissue paper, sometimes two thicknesses, which I arrange so as to come directly between the sitter and the bright spark of the lamp. This also has a tendency to soften and diffuse the light. From the top of this side screen I have a projecting screen of the same material coming out over the sitter, adjustable to any angle. This, when used properly, serves to give the combined top and side light effect. Next I have a large screen, or reflector, which I place on the opposite side of the sitter. This is also adjustable. I also have a hand screen or white muslin reflector which I use to throw the light in any direction and soften shadows. I use the ordinary background, or sometimes unbleached muslin. I light the whole or any part of the sitter or background with my mirror reflector.

This is my simple *modus operandi*, and if it will do anybody any good they are welcome. I make no issue with Vanderweyde, Kurtz, or any of the "high lights" in photography. I do not say that my way is best, or that it cannot be improved upon; but I do say that it is simple, cheap, and with me, successful. I have received numerous letters from parties asking information, etc., all of which I have answered as best I could. I will say to any and all, get a lamp and try for yourselves.

Have used the light for printing with good results; also in copying.

HINTS.

If you use the electric light, *don't take tintypes*.

Give full exposure, time about the same as with wet plate.

Use the most rapid dry plates

CORRESPONDENCE.

EDITOR PHOTOGRAPHY,—*Dear Sir:*—I have just read Dr. Garrison's lecture read at the February meeting of the Chicago Amateur Photographers' Club, and must enter a decided protest against his conclusions. I have used plates from a number of manufactories, and since have made and used my own, and have, I know, a safe light not only for developing, but also for making emulsions, and coating plates.

My emulsion room is windowed with one thickness of ruby and one of orange glass, but as I develop my plates under an 18x20 *orange* light I do not doubt that I could use the orange alone, and artificial light, to coat plates.

It may be judicious to mention that I use five grains of iodide potash to 555 grains bromide potash in my emulsions. The plates are *very rapid* and clear. (I have none to sell.)

From an experience of almost two years I am sure that a good deep orange glass is a sure protection to good plates; any plate that must be worked in absolute darkness, with your eyes shut, is of no use to any one.

If the dark-room window is exposed to sunlight direct, add more orange glass, or may be a thickness of ruby, for while the ruby lets a little light in at the lines G and H in the spectrum, the orange does not, and the ruby also lets in no light at E (green) but a trace at C and none (actinic) at A. Orange lets in no blue.

Briefly, a thickness of pale ruby and deep orange should be protection to any good plate excepting, perhaps, where direct sunlight strikes the developing window. I never tried that.

Marshalltown, Iowa. A. F. BONNEY.

YET ANOTHER APPLICATION OF PHOTOGRAPHY.

Drawing corks is too tedious an operation. They are now photographed by the instantaneous process.—*Funny Folks*.

THE STATE MICROSCOPICAL SOCIETY OF ILLINOIS.

THE regular annual meeting of the State Microscopical Society was held at the Academy of Sciences, on Friday evening, April 25th, Vice-president Prof. Hill in the chair.

The minutes of the previous meeting were read and approved, and the receipt of the Bulletin of the Belgian Microscopical Society, vol. 7, announced. The name of Mr. E. H. Sargent was proposed for membership.

The treasurer made his annual report and the auditing committee reported his statement as correct.

Dr. Detmers, chairman of the committee on the Journal, reported progress.

The election of officers being the next business in order, Mr. C. O. Boring and Mr. Summers were appointed tellers and the society proceeded to the election of the various officers which resulted in the choice of Prof. E. S. Bastin as president, Prof. E. J. Hill and Mr. W. H. Bullock as vice-presidents, Mr. William Hoskins, secretary, Mr. C. S. Fellows, corresponding secretary, and Mr. W. H. Summers as treasurer: the trustees consisting of C. O. Boring, B. W. Thomas, B. F. Nourse, H. A. Johnson, M. D., and H. Gradle, M. D. Moved and seconded that fifty dollars be appropriated for the use of the trustees during the coming season. Carried.

There being no further business the society adjourned. W. HOSKINS, Sec.

THE COLOR OF DIAPOSITIVES.

THE color of diapositives for lantern slides and enlargements has often been a subject for lively discussion. Some insist that those of a warm, possibly of a red tone, are the most acceptable. In that case, chloride of silver should be placed foremost, as with it all gradations of tone from black to pure red can be obtained. It is doubtful if the photographic value of two pictures, one of which is blue and the other black, and both having the lights pure glass, will remain equal by transmitted light. Chloride of silver emulsion has extraordinary advantages regarding clearness and transparency. The relative virtues of chloride to bromide emulsion are similar to those of albumen to collodion. Dr. Stolze, when making large chloride of silver emulsion diapositives for his "Persepolis," showed how easily a perfect scale of tones could be made from black to a pure red, or from black to a perfect green. His developer was made by dissolving ferrous oxalate in a concentrated and boiling-hot solution of citrate of potassa, and by cooling the same excluded from air. This developer when fresh makes a beautiful green, but by using it continually the tones become darker—either black, brownish-black, or red. The more the developer is exhausted the redder the tones become. Diapositives of all the tones and colors mentioned make also equally good negatives.

Translated from the *Photographische Wochenblatt* for the *Photographic Times*.

ILLUMINATION OF THE DARK-ROOM, AND SOME OPTICAL EXPERIMENTS.

BY CAPTAIN ABNEY, R.E., F.R.S.

[Read before the Photographic Society of Great Britain.]

At the January Monthly Technical Meeting of the society I brought some samples of what I supposed to be canary medium and showed the results I had obtained with it. The canary medium that I had manufactured was made by emulsifying chromate of lead in gelatine by means of the double decomposition of acetate of lead and bichromate of potash, and applying it to glass and paper. I also soaked paper in acetate of lead and then in bichromate of potash, and got a very good imitation of the canary medium. The results were not satisfactory. With three gelatinized glasses in front of the negative, in three and a half minutes I was able to obtain a fully exposed transparency, whilst with the paper in a lantern, two thicknesses of same paper, impregnated with the lead chromate, enabled me to get a transparency in three minutes, the source of light in the lantern being a candle, and the negative placed a foot from it. The illumination was brilliant—much more so than when I used the common orange packing paper, which I show. With the orange paper, after five minutes' exposure, I got the very faintest trace of an image.

So far, then, my test went to prove the superiority of the orange paper. After I had made my remarks at our Monthly Technical Meeting, Messrs. Scorah & Co., of Bradford, kindly sent me a sample of the true canary medium, and with this I have experimented. The paper you will notice is thick—I may say, very thick—much thicker, indeed, than the orange paper. Now, about the illuminating value of the two. I show a lantern in which we have one side formed of a square of canary medium, another of a square of orange paper, and the third side a square of stained red glass, of which I shall have to speak by-and-by.

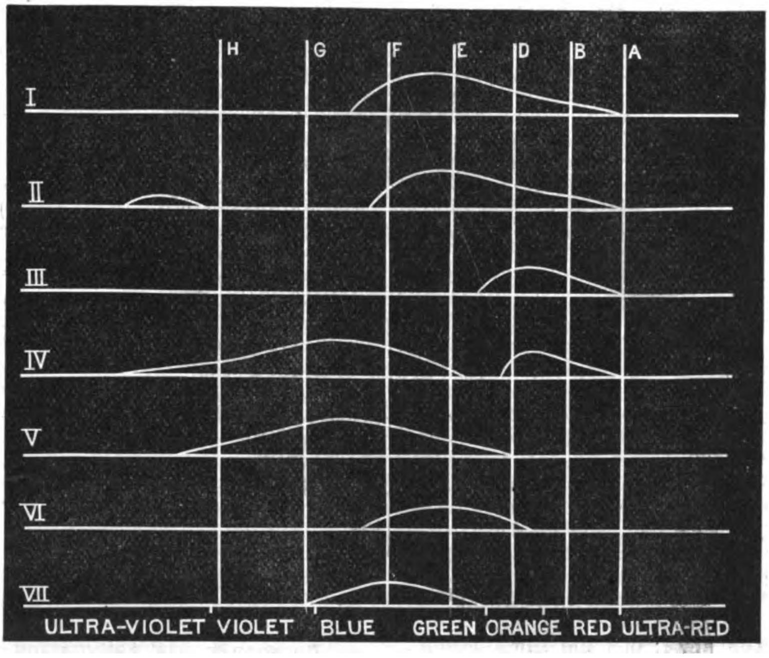
I think the members of the society will agree with me in saying that of the two paper panes, the orange is the more brilliant. Now, appearances may be deceptive, of course; so, to avoid all cavil, I made photometric tests of the two. The candle being lighted a piece of printed matter was held in a vertical plane. The eye was kept at a fixed distance from the paper, and the lantern moved till the letters of the words could not be distinguished. In case of the canary medium, I found that at 2 feet 0½ inch the letters first became confused, whilst at 2 feet 6½ inches they became confused when the orange light was tested.

Though not absolutely exact, the relative intensities of illumination may be taken as the squares of the distances, which would make them about as 16 to 25, or the orange paper had 1½ times as much illuminating power as the canary medium. Testing the stained red glass, I found that the light had to be moved to 4 feet 4 inches distance, or was 4½ times more luminous than the canary medium. Thus, the illuminating values of the three were about as follows:

Canary,	Orange paper,	Stained red glass,
1.	1½.	4½.

To further test this matter, closely ruled black lines, on a white ground, about 1·50 inch apart, were taken and placed at 6 feet distance from a small observing telescope, and the lights moved as before. In the case of the canary medium the lamp had to be moved 3 feet 2 inches from the ruling, the orange 4 feet 1 inch, and the stained red 6 feet 7 inches. These were all the mean and three closely accordant readings. This gave the relative illuminations as—

Canary,	Orange paper,	Stained red glass,
1.	1.63.	4.32.



The reading test and the more accurate test, here adopted, are closely accordant in every way. In fact, this is very much the plan that is adopted for star magnitudes, though in this case the surface of the object glass is diminished by diaphragms, instead of the stars themselves being deprived of luminosity.

So much for my own readings It seemed that it would be curious to note any differences in individual eyesight as to the intensity of color in these media, and yesterday I had the good fortune to secure Mr. C. Ray Woods as an observer, and later Mr. Cadett. In this case the experiment had to be slightly varied, from my dark room being only partially available, and the light and the eye were kept in a constant position, whilst the ruled lines above mentioned were moved to and from the observer. The following table gives the result of the comparison of Mr. Woods' eyesight for color with that of my own:

	Mr. Woods.			Capt. Abney.		
	First Exp.	Sec'd Exp.	Mean.	First Exp.	Sec'd Exp.	Mean
Canary paper.......	1.00	1.00	1.00	1.00	1.00	1.00
Orange paper.......	1.87	1.86	1.86	1.51	1.44	1.47
Stained red glass...	5.14	4.76	4.90	3.00	3.12	3.06

To sum up, Mr. Woods made the illuminating powers 1, 1.86, and 4.90; whilst I made mine 1, 1.47, and 3.06. It will thus be seen that as the green was cut off, so Mr. Woods' vision became more acute than mine.

Mr. Cadett's figures were again different to mine; and here I must interpolate that a more exact observer I have not met with. His observations did not vary more than ¼ of an inch on each side of the mean. His reduced readings were 1, 1.39, and 2.70. We therefore see that his eyes are less susceptible to red rays than mine, and still less so than Mr. Woods'. The last method of testing is inexact, of course, and cannot be compared for accuracy with that of the fixed lines and telescope, and apparently the results do not accord. I think, however, it will be seen that the want of accordance is more apparent than real. Taking my own observations of printed matter, for instance, when the printed matter was moved the distances, in the last experiments, from the eye (not from the light) were 21 inches, 24 inches, and 30 inches.

The angle subtended by the writing at the three distances would be inversely as the distance, and the confusion of lines would be sooner arrived at than if they always subtended the same angle, as was the case in the first experiment. To make the two readings comparable one with the other, the orange paper and stained glass readings, the last experiments must be multiplied by 24 21 and 30·21 respectively. This would give the reduced readings as 1, 1.63, and 4.37, which is nearly the same as 1, 1.69, and 4 32, which were the figures of the telescope reading. However, one thing has been apparently proved, that the eyes of three persons chosen at random are not equally sensitive to the red rays. Mr. Woods informs me that he can scarcely see H and K in the extreme violet limit of the spectrum; whilst I can see not only H and K, but L, and in bright light, M as well. It seems then as if there were in his case a general lowering of sensibility and wave length. I have not taken into account color-blind people. This I may deal with at some subsequent period

I may remark that with a sheet of white tissue paper in front of the glass the figures came out as:

Canary,	Orange,	Stained red, with tissue,	Stained red, bare,
1.	1 63.	2.93	4.37.

By means of the pocket spectroscope it was possible, by placing two pieces of paper alongside one another in the lantern, to examine their absorption spectra comparatively. The result showed that the red and yellow of the canary medium were decidedly fainter than in the orange paper, whilst in the former appeared more green and a little blue *Prima facie*, then, the orange should be the best medium to use for photographic purposes.

So far we have had merely a theoretical test for the chemical value—the question is, what is the practical one? A plate was exposed behind a negative with a piece of orange paper across one half, and a piece of canary medium across the other, with the result that after 1½ minutes' exposure to candle power 2 feet off, there were traces of an image through both, the two being nearly alike. Perhaps the orange paper had a little the best of it. Behind the stained red glass not a trace of an image appeared with the same exposure. Thus, then, the practical test leads to this conclusion, viz., that of the three media, stained red glass is the best, both as for illumination and want of effect on a plate, whilst the canary and orange papers acted alike as to their effect on the plate; but the illumination was 50 per cent in favor of the latter. I must confess that the canary medium behaved much better than I expected in candle light. I may add that with day-light it is not such a good protection as the orange paper Stained red glass behaves better than either of these two; and when I say stained red, I do not mean orange or flashed silver glass, which is often spoken of as stained red.

I have to lay before the meeting a photograph of the absorption spectra of different glasses, taken by the electric light; the first plate shows—

1. Chromate of lead.
2. Orange glass.
3. Stained red.
4. Flashed ruby.
5. Green glass.
6. Green glass and chromate.
7. Green glass and ruby.

Another plate I show is the same as the 1st, with the exception that it was taken with a candle as the source of illumination, and that in No. 4 a very deep ruby, flashed on two sides, was used, and for 7, cobalt glass and ruby, superposed, were spectroscoped.

The orange glass lets through the ultra-violet with the electric light, but does not do so with the candle, as there are few ultra-violet rays in its light. The ruby glass lets through the green and blue in both cases. In the 2d plate the impression made by these colors is only faint, but still it is there; and when it is recollected that the two minutes' exposure was given to a slice of light 1-200 inch broad, spread out into a spectrum four inches long, and that an impression was made by it on a sensitive plate, it will readily be seen that the two minutes' exposure to undispersed light would make a far greater impression.

The use of green glass is not to be recommended, since it only cuts off red rays, which are comparatively harmless, and materially diminishes the light. In regard to canary medium, it is, I should say, paper impregnated with chromate of lead. It must be recollected, however, that chrome yellows are of different tints. Thus, ordinary chromate of lead can be altered in tint by the addition of nitric acid, and much deepened in color. It may be, perhaps, advantageous to use such a deepened color; but as to this I speak with some hesitation, since my experiments in this direction have been very meager. Let me, in conclusion, say that I have no bias one way or another, and that I should not hesitate to use canary medium of such a quality as has been sent me in the development of plates. At the same time I should not care to expose very sensitive plates long to the light coming through it, since I should expect disaster. The point is to use the safest light possible—for no light is absolutely safe—and to use the greatest quantity of it within the margin of safety. This was a point laid down by one of the speakers at the January Technical meeting, and cannot be too much insisted upon.

PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

MEETING OF THE EXECUTIVE COMMITTEE IN CINCINNATI.

Present, J. H Kent, president, Leo Weingartner, secretary, W. A. Armstrong, treasurer, E. Klauber, J. F. Ryder, executive committee.

Mr. Kent called the meeting to order. On motion of Mr. Ryder, Mr. Klauber was called to the chair; Mr. Armstrong, secretary. The secretary was empowered to employ a stenographer to report the proceedings of the convention and furnish a copy of the same to the journals who apply for it, free of charge.

On motion of Mr. Ryder, in view of the increased expense attending this coming convention the treasurer be instructed to urge on all dealers, manufacturers and importers the necessity of notifying the secretary without delay the amount they are willing to subscribe. After considerable desultory talk the committee prevailed upon Mr. Kent to give practical demonstration in the handling of a sitter under a light, and as Mr. Kent stands at the very pinnacle of his profession, these experiments will attract wide-spread attention. The platform upon which these demonstrations will be made will be 30x50 feet, and the committee will have every thing in shape that those desiring to make sittings can do so. There will be several other prominent members of the profession who will demonstrate under the light, but at present the committee can not tell who they are. As the matter of business at the present time is of the greatest importance, the executive committee prevailed upon Mr. Ryder to address the convention upon the business management of photographs. On motion of Mr. Armstrong, the photographic fraternity were invited to co-operate with the committee in promoting the success of the coming convention. After the transaction of some other matters not fully matured the committee adjourned. All parties wishing to make a display of photographs, and stock dealers, should apply to the secretary for space at once.

Leo Weingartner, Sec. P. A. A.
W. Armstrong Sec. *pro tem.*

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

We make the following extracts from the minutes of April meeting, as reported in the *Photographic Times*:

The chairman said he would refer to the mercury accelerator, given to the public some time ago, on account of the fact that it had been commented upon a good deal in the journals, and to the effect that hardly two had got precisely the same results. A formula might be given to a dozen men, all experienced photographers, and not two of the dozen would obtain precisely the same results. Why that was so had been a mystery to him, but it was true, nevertheless. As a rule, any formula given to the public was not followed closely. He had seldom found one that had failed with the iodide of mercury dissolved in the iodide of potassium when they had followed his directions. In using the compound, its success depended in the iodide of potassium being largely in excess. That was where many had failed. If there was any less of the iodide of potassium, it would react and produce a precipitate. If there should be any change, add more iodide of potassium until the solution remained clear. He never used the mercury developer except when he had a plate very much under-exposed. For rapid work he compounded:

Carbonate of soda	15 grains.
Carbonate of potash	15 "
Sulphite of soda	15 "
Water	1 ounce.

Using $2\frac{1}{2}$ grains of dry pyro. to the ounce. That, he said, would give a negative like one he then exhibited—a picture of a swan on the lake in Central Park. Unless a very small stop was used or a very rapid exposure was made, full strength of the compound would not be necessary. For ordinary gallery work he did not recommend more than half or even quarter strength. He also exhibited negatives made by Mr. Canfield of passing trains on the elevated railroad, in which the drop-shutter was used.

The secretary said that as he noticed a good many new faces, many of whom might be amateurs, he thought it might be well to mention that it would not do to use fifteen grains of the carbonate of soda bought in the grocery store in making the soda developer. It was not the common washing soda in crystals, as that contained sixty per cent of water. The granulated was the kind meant, and it could be had at drug stores. Still, the ordinary carbonate would do if it was crumbled and put into a wide-mouth bottle and exposed to the air for weeks or months in a warm room.

ROCHESTER PHOTOGRAPHIC ASSOCIATION.

At the meeting, March 10th, in answer to the question, Is it desirable to use small stops in connection with dry plate work?

Mr. Williams said he used a stop suitable to the subject to be treated; if he had an interior to make, which required all definition possible, he would use a very small stop.

Mr. Mawdsly said that in landscape work too small stops were used. They lost in a great measure the beauty of the picture by the want of proper atmospheric effect. On the other hand, they might spoil an otherwise pretty picture by too much diffusion of focus. There was a happy medium. If an interior was the subject to be treated, then by all means use a small stop, so as to secure as much definition as possible, but in landscape work, in extended views they must be careful not to stop down too much, for by doing so they brought the distance into undue prominence.

The first question for discussion at the meeting of the Rochester Photographic Association held May 5th, was, "What causes large blisters?" Mr. Bostwick, to whom the question had been referred, reported briefly that they were caused by the solution of hypo being too strong. Mr. Hoover said that in his judgment the blisters are owing to a change in temperature, gas being formed. Blisters occur when the hypo is mixed as it is wanted. It should be made the night before, and allowed to stand for a time. Mr. Wardlaw had found that the albumen appeared stretched. The hypo should stand at least one day before being used. Mr. Nelson had observed a peculiarity that a break in the paper accompanied a large blister, and some discussion followed as to whether the break caused the blister or *vice versa*. Mr. Ingals said that some kinds of paper are more apt to blister than others. Double albumenized paper was not so apt to blister as the single. He was inclined to ascribe the blistering to something in the albumen. Mr. Hoover explained that paper is more porous when single and allows the gas to pass off through the pores, thus avoiding blisters. President Fox gave the results of experiments with several different kinds of paper; one did not blister and the other three did. He had used acetic acid after prints were taken from the bath with good results. Mr. Wardlaw had made some experiments with citric acid, and the prints were spoiled. Some one suggested the use of alum, and Mr. Wardlaw objected that the prints could not be burnished after alum had been used. Mr. Hoover remarked that blisters would not form where the prints were taken from the soda bath and laid face up in a bath of pure water and allowed to sink of themselves. Mr. Inglis' experience differed with that of the last speaker, with him that method produced plenty of blisters. In Mr. Lee's practice blisters would mostly always form where the hypo was newly mixed. He preferred preparing it the night previous. Mr. Wardlaw had used the hypo solution the second time and no blisters were formed.

BUBBLES IN THE DEVELOPER.

The second question was, "What caused bubbles in the pyro-developer?" Mr. Lee opened the discussion with the remark that they could not be caused by glycerine, otherwise the bubbles would be more prominent on the first plates. Mr. Inglis ascribed the bubbles to the manipulator, and not to the developer. When the developer is used frequently bubbles will appear. He had noticed, when bringing plates to the light after developing and placing in the fixing bath, that spots would appear that had not been fixed. He had placed the plates in the bath again and they were fixed at once. He thought it was not bubbles but something on the plate. Mr. Wardlaw had heard photographers call marks "bubbles," when in fact they were places where the developer had not acted. Mr. Eastman said that the moisture would recede in spots when the plate is held up. If it is again placed in the solution it would not act. The spots are caused by the action of the air on the surface, which prevents the action of the solution. When the developer contains ammonia, which is a solvent of gelatine, portions of gelatine will appear after the developer has been used, and will cause bubbles.

ELECTION OF OFFICERS.

The following officers of the association were elected to serve six months.

President,—J. M. Fox.
Vice-President.—Charles T. Pomeroy.
Secretary,—William J. Lee.
Treasurer,—S. D. Wardlaw.
Members of Executive Committee,—George Bacon, W. S. Nelson.
Finance Committee,—Willis Jaynes, Fred Stone and Willis Bannister.

After the usual routine business the meeting adjourned.

CHICAGO PHOTOGRAPHIC ASSOCIATION.

The regular monthly meeting was held on Wednesday evening, May 7th, at the offices of the Van Depoele Electric Light Co., 203 and 205 Van Buren street; Dr. H. D. Garrison, president, in the chair. About sixty members and others present.

On motion, reading of minutes last meeting dispensed with.

The secretary read a letter from Mr. Charles Ehrmann, of New York, asking the association to contribute toward the relief of Herr Huenarjaega, and enclosing extract from the *Deutsche Photographen Zeitung* (Weimar), of February 29, in relation to the matter. (This extract was published in the last number of *Photography.*)

On motion, Mr. Douglass was appointed to pass the hat, and $8.00 was subscribed. (It should be mentioned here, that quite a number of those present had already contributed to the same object at the last meeting of the State of Illinois Association.) Mr. Douglass moved that $5.00 be added from the treasury of the association, and that the secretary be instructed to forward the amount to Mr. W. Irving Adams, New York, who has kindly consented to receive subscriptions to this charitable object. Carried.

Mr. G. H. Sherman, of Elgin, now read his paper on "Electric Light Portraiture," which we print *in extenso* on another page.

On the conclusion of this paper, Mr. Sherman proceeded to practically illustrate his method of working. He commenced by explaining that, owing to a misunderstanding, he had to work with an extemporized reflector made in a few minutes after 6 P. M. that evening, and that consequently he would have to work under a slight disadvantage, and the exposures might be some seconds longer than if he had been provided with a proper reflector, such as he used at home.

The first "victim" was Mr. A. K. Stiles, vice-president of the Van Depoele Co., whose stately form and venerable appearance render him a very good subject. He was followed by Prof. C E. Haskins, city electrician; after whom came Mr. Albert Wahl, traveling agent; Theodore P. Bailey, secretary; C. J. Van Depoele, electrician, and Mr. Fox, all of the Van Depoele company. Some other gentlemen were similarly immortalized. The exposures varied from fifteen to twenty seconds, and the time seemed to have been pretty correctly judged except in one case, which was a little under-timed. Some of the negatives exhibited a slight want of sharpness, due probably to the vibration of the floor which carries the line-shafting used for transmitting power to the dynamos. Mr. Sherman used only one arc light although two others had been generously provided by the company, making the room as light as at noon. Besides these three lights another had been fitted in Mr. Gentile's enlarging apparatus, and was used by that gentleman in making enlargements on albumen paper, which were printed in from five to twenty minutes. It was very unfortunate that, owing to the radical optical defects of this apparatus, Mr. Van Depoele's time and trouble in fitting it up with a 3,000 candle light were largely thrown away, most of the light being in fact wasted. Still, it served to show to a certain extent what could be done in the way of enlarging by electric light.

We do not mean to attach any blame to Mr. Gentile in the matter; he provided the best apparatus at his disposal, and devoted a great deal of time to the matter at some personal inconvenience. The fact is, this part of the programme was only thought of a very few days before the meeting, and there was not time to get up suitable enlarging apparatus. Under the circumstances, we think it would have been better to have omitted it.

Contact prints were also made on albumen paper by the light of the two arc lamps in the back part of the room. These were entirely successful, the exposure required being only a little longer than would have been necessary with diffused daylight. The development was in charge of Mr. P. B. Greene, who worked under serious disadvantages, the dark room being two floors above the "operating room," and the water supply sixty feet distant from the dark room. Under these circumstances Mr. G. is entitled to great credit for the satisfactory manner in which his part of the work was performed. The plates used were supplied by Mr. McDonald, Beebe & Payne, and the Hudson Dry Plate Company.

After the demonstrations were at an end, the Chair stated that Mr. Geo. E. Bowen, mayor of Elgin, had tendered the hospitalities of that city to this society, if they would come there to hold a meeting, and that this offer included free transportation. While he felt sure the association must feel greatly indebted for this very kind offer, still he (the Chair) had doubts whether they ought to meet anywhere but in Chicago. Mr. Gentile stated that a similar offer had been made to the State of Illinois Association, and would undoubtedly be accepted, as it was in order for that organization to meet anywhere in the State. Should the C. P. A. feel that it would be inappropriate to hold a regular meeting there, he would invite them to go as guests of the State association.

Mr. Douglass moved that this arrangement be adopted, and the invitation conceded to the State association. Carried.

The Chair called the attention of those present to the fact that the next meeting of the Amateur Club, on the 19th inst., will be devoted to a lantern exhibition of dry plate slides, and hoped as many as possible would attend. Place of meeting will be announced hereafter.

A vote of thanks having been passed to Mr. Sherman for his paper and demonstration, to the Van Depoele Electric Light Co., and Mr. Van Depoele in particular, for the handsome manner in which the association had been entertained, and for courtesies extended to the committee of arrangements; also to the mayor of Elgin for his very kind invitation, the association adjourned.

◆

The new edition of Magnin's exhaustive treatise on Bacteriology, recently published at New York by Dr. Sternberg, affords striking illustrations of the solid work which photography may perform. The heliotype plates of the bacteria found in yellow fevsr blood, and in the lesions of various diseases, are striking proofs of Dr. Sternberg's skill and patience.—*Photographic News.*

CHICAGO AMATEUR PHOTOGRAPHERS' CLUB.

Regular meeting held in their room, 229 State St., Monday evening, April 21st, Dr. H. D. Garrison, President, in the chair. Only about members present. Called to order at 8:25. Re ing of minutes of last meeting dispensed w Messrs. H. F. Barnard and Robinson elec members.

Mr. Greene showed a new arrangement of focussing cloth, to cover up camera completely, and provided with a pocket for slide of plate-holder when the latter is drawn out. Also some prints from negatives on McDonald plates, all short exposures, and one made with a very rapid spring shutter, which he exhibited. It is of the "Diamond" pattern, slides working past one another in opposite directions. It is designed for use on a single combination lens, where it can be placed close to the stop, and Mr. G. explained that shutters of that class are not adapted for use with doublets—unless constructed to work between the lenses. Mr. Burnham thought this shutter was too quick for any useful purpose. He maintained that nine out of ten instantaneous views can be made with a gravity drop, and, in effect, that the results obtainable with Mr. Greene's shutter, unless under exceptionally favorable conditions, would not be worth having.

Prof. Hough held substantially the same views. He said that even with a shutter as rapid as Mr. Greene's it would be impossible to make a sharp picture of a moving street car, for instance, "broadside on," at the distance of half the width of the street; and therefore it was useless trying to do such work, and for all ordinary cases a considerably longer exposure could be given. In other words, the position held by Prof. Hough and Mr. Burnham is this: Inasmuch as there are some subjects of which decent negatives can not be made with any shutter, therefore we should confine ourselves to those that admit of sufficient exposure to make a good picture, and these can always be made, if not with a gravity drop, at any rate with an ordinary drop supplemented with a light rubber band.

Mr. Edgeworth thought that a shutter behind the lens was better than one in front.

Mr. Greene stated that a shutter of his construction superseded the necessity of stopping down, at least to a great extent, because the aperture gardually increased in size both horizontally and vertically from commencement to middle of exposure, and then diminished again; so that a good part of the exposure was made with a small opening, yet a large volume of light was admitted just in the middle of exposure—the whole field of lens being included all the time, since the shutter worked close to diaphragm.

Some negatives on Cramer plates, kept four years before exposing, were shown by Mr. Burnham, Prof. Hough and the secretary. These negatives showed conclusively that these particular plates had not deteriorated by keeping—a little slower development being about all the difference perceptible. Mr. Edgeworth explained the circumstances which led to their being laid aside for so long, which were purely accidental, and also that they were packed with pieces of manilla paper between them. They had been kept in a moderately, but not exceptionally, dry place. He thought there was a good deal of unnecessary howling about the deterioration of gelatine plates and negatives; he had some gelatine negatives intensified with mercury and ammonia in February, 1880, that were as good now as the day they were made.

Mr. Burnham asked if any one knew positively whether plates were injured by packing with paper between.

Mr. Douglass replied that it was held by many that the mechanical pressure caused a diminution of sensitiveness.

The Chair asked Mr. Edgeworth whether, in using gelatine plates in a bonanza holder, he had observed a transparent, or semi-transparent margin where plate had been covered by separator.

Mr. Edgeworth answered that sometimes this margin would show, sometimes not. Mr. Cramer now uses a "dipped" or shellacked separator, and has found it an improvement. Much of the trouble formerly complained of with separators and paper packing arose from the way the dealers used to stack the boxes on top of one another.

Mr. Greene took no stock in the pressure theory, provided the plates were thoroughly dry at time of packing. The trouble was, the straw board used for this purpose contained soda and lime, used for rotting the pulp, and if any moisture was present this would be absorbed by the plates.

Mr. Beebe, he said, being at one time much troubled in this way, had endeavored to find a straw board free from these impurities, but failed.

Some discussion ensued as to whether any change in sensitiveness could be produced by mechanical pressure, Mr. Edgeworth bringing up the instance of writing on the film with a blunt instrument to prove the affirmative, and the Chair remarking that sudden pressure sometimes produced great changes, instance, nitro-glycerine.

Mr. Burnham thought a very simple experiment would settle the question.

The last named gentleman showed a 4x5 gelatine plate, one of a dozen recently returned by purchasers as unusable (the maker's name was charitably withheld) which was three-sixteenths of an inch thick. Of course, no dry-plate holder of ordinary construction would take such a plate.

This led to a discussion as to possible substitutes for glass as a support for negative films; the Chair had tried mica, but found it impossible, even in New York, to find any at once thick enough and transparent enough. And it could only be obtained of very limited size.

Mr. Douglass observed that some years ago he obtained some from North Carolina that seemed to fill the bill, and thought he could get some more from the same source. The Chair remarked that the samples just referred to were very thin.

Mr. Burnham proposed that the next (May) meeting be a lantern exhibition of dry-plate slides, and that circulars be at once sent to all members asking them to make and bring such slides—no wet work to be admitted. He thought the members who worked at photo-micrography could contribute some very interesting slides.

Prof. Hough said it was useless trying to make slides on any dry plates that would not give clear glass in deep shadows.

Mr. Edgeworth could not see why the Chicago amateurs should be behind their Milwaukee brethren; the latter found no difficulty in making "dry" transparencies. He believed it was easy enough if a good clean negative was used.

A motion to above effect being made by Mr. Douglass, was duly carried.

On motion, adjourned.

RESTORATION OF FADED PHOTOGRAPHS.

It is only to immerse the yellowed print in a dilute solution of bichloride of mercury until all the yellowness disappears. It is then well washed in water to remove the mercurial salt. If the print be a mounted one, it is by no means necessary to unmount it previously to treatment. All that is required in this case is to keep it in intimate contact for a time with blotting paper charged with the bichloride; indeed, this is the plan originally suggested by Mr. Barnes. By the bichloride treatment no lost detail is actually restored, as some have imagined. It is simply that the sickly yellow color which, as it were, buried the delicate half-tints, or what remains of them, is removed, and thus renders the picture bright and clear. Pictures which have been treated with the mercury always possess a much warmer tone than they did originally, as the purple or black tones give way to a reddish brown or reddish purple—more or less bright according, probably, as gold or sulphur has been the principal toning agent. Here a question very naturally arises with regard to the future permanence of pictures which have been thus "restored," seeing that negatives intensified with mercury or transparencies toned with it are so prone to change. In answer to this we may mention that they appear to be permanent—at least that is our experience with some that have been done for many years. There appears to be no further loss of detail, and the whites retain their purity. Indeed, since undergoing the treatment with mercury, no alteration is yet perceptible.—*Br. Jr. of Photo.*

Legal Intelligence.

COPYRIGHTS FOR PHOTOGRAPHS.

In the case of Sarony *vs.* Burrow Giles Lith. Co., the Supreme Court of the United States holds that in certain cases photographs are to be regarded as art works, and copyrights will therefore be sustained.

The original suit was commenced by an action at law in which Sarony was plaintiff and the lithographic company was defendant, the plaintiff charging the defendant with violating his copyright in regard to a photograph, the title of which is, "Oscar Wilde, No. 18." A jury being waived, the court made a finding of facts on which a judgment in favor of the plaintiff was rendered for the sum of $600 for the plates and 85,000 copies sold and exposed to sale, and $10 for copies found in his possession, as penalties under section 4,965 of the Revised Statutes.

Among the finding of facts made by the court the following presents the principal question raised by the assignment of errors in the case:

3. That the plaintiff, about the month of Jan-

uary, 1882, under an agreement with Oscar Wilde, became and was the author, inventor, designer, and proprietor of the photograph in suit, the title of which is "Oscar Wilde, No. 18," being the number used to designate this particular photograph and of the negative thereof; that the same is a useful, new, harmonious, characteristic, and graceful picture and that said plaintiff made the same at his place of business in said city of New York, and within the United States, entirely from his own original mental conception, to which he gave visible form by posing the said Oscar Wild in front of the camera, selecting and arranging the costume, draperies and other various accessories in said photograph, arranging the subject so as to present graceful outlines, arranging and disposing the light and shade, suggesting and evoking the desired expression, and from such disposition, arrangement, or representation, made entirely by the plaintiff, he produced the picture in suit, Exhibit A, April 14, 1882, and that the terms "author," "inventor," and "designer," as used in the art of photography and in the complaint, mean the person who so produced the photograph.

Other findings leave no doubt that plaintiff had taken all the steps required by the act of Congress to obtain copyright of this photograph, and section 4,952 names photographs among other things for which the author, inventor, or designer may obtain copyright which is to secure him the sole privilege of reprinting, publishing, copying, and vending the same. That defendant is liable under that section and section 4,965 there can be no question, if those sections are valid as they relate to photographs.

The findings, we think, show this photograph to be an original work of art, the product of plaintiff's intellectual invention, of which plaintiff is the author, and of a class of inventions for which the Constitution intended that Congress should secure to him the exclusive right to use, publish, and sell, as it has done by section 4,952 of the Revised Statutes.—*Scientific American.*

THE PROPRIETORSHIP OF THE NEGATIVE.

Gradually and surely we are getting the law on the side of the photographers. Every case that comes before our tribunals on the subject of the proprietorship of the negative deserves to be carefully noted, and we must beg our correspondents, as much for their own sakes as for our own, to make known to us any decisions of this nature that come under their observation. Lawyers, as everybody knows, go as much by precedent as by equity, and hence it is of the highest importance to place on record every decision pronounced in favor of photographers.

Although we are now in a position to cite some half dozen cases in which the proprietorship of the negative has been decided in favor of the photographer, these decisions have for the most part been given abroad. It is the rarest occurrence to find the matter in dispute in an English court; still we do not remember a single instance in which a photographer—who has not previously bargained to take a *negative* for his client—has been compelled to give up the negative, as part and parcel of a contract entered into to supply photographs. The case decided last week by Mr. B. T. Williams, Q. C., the judge at the Swansea County Court, is not so strong as one in which the negative of an ordinary portrait is involved, but still the dictum of the learned judge is clear enough on the subject, and it is one which our professional readers should bear in mind.

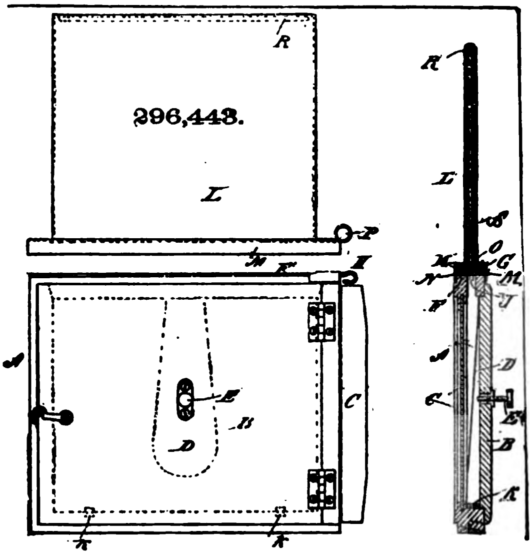
The opposing counsel's contention that the case was on all fours with that of an engineer who charges a customer with a steam engine at £500, and for patterns in making it, £250, and where the customer would have a claim to the patterns, since he paid for them, can in no way be compared to the case of the photographer. Had the latter charged for a foreground for taking the pictures, no doubt the customer might have claimed it; but negatives, as the learned judge remarked, are rather in the category of tools, and a workman does not usually part with these when he sends home his work.

However, for the present, it will suffice to quote the case as it stands in the *Cambria Daily Leader* of March 21:

> Mr. Andrews, photographer, Wind Street, sued Mr. Robert Capper, superintendent of the Swansea Harbor, for £5 8s. 6d. Mr. Monger appeared for plaintiff, and Mr. Glascodine represented the defendant. The claim arose in connection with certain photographs of H. M. S. *Dwarf*, which was in Swansea in September last. Defendant commissioned the plaintiff to execute views of the vessel on her arrival in and departure from the port, together with groups of officers and men on board -an order which the plaintiff duly carried out. He delivered several copies to Mr. Capper, and supplied copies to others. The amount charged was £10 11s. 6d., £5 8s. 6d. of which was for "photographing" the vessel and groups, and £5 3s. for the copies supplied. Mr. Capper paid for the copies supplied, and offered to pay the £5 8s. 6d. if Mr. Andrews handed over the negatives, but the plaintiff claimed that the negatives continued his property. For the defense, it was urged by Mr. Glascodine, that as the plaintiff claimed to charge for executing the negatives, they belonged to the defendant, who gave the order, and charged for making them. The Judge: If you order a photograph, unless you make special terms for the purchase of a negative, the photographer is not entitled to give it up. Mr. Glascodine said if he asked a man to make something for him, and he afterwards asked for copies and paid for them, they were his. If a photographer charged him for taking a negative, did it not belong to him? The Judge: No! it is part of the instruments used in the business. It is what a photographer uses in his business to make photographs. Why should he part with the instruments of his trade? A negative may be a secret in his trade, and he does not part with it unless there is a contract to that effect. Mr. Glascodine: Suppose I ask a man to make me an engine for £500, and suppose he charges £250 for the patterns. Do the patterns belong to me or do they not? If he charges me for them, they are mine. If he does not charge me for them, then, of course, they are not mine. The Judge: But here he does not charge for the negative. He charges for his work and for copies, and he makes an estimate accordingly. You want photographs for your friends. It does not matter to you how he makes or produces them. There might be other means to produce what you want; therefore what has this to do with you? He charges you for the expense in producing what you want. As I said before, he estimates the cost of producing, but does not sell the material used in production. He wants it for other purposes. If you like, I will give you leave to appeal. Mr. Glascodine: If so, that will be sufficient. Perhaps you will be good enough to note what I said about the making of an engine and the patterns. His Honor: Quite so; I find as a fact that the photographer never sold the negatives to the defendant, and I give judgment for the amount claimed with costs and advocates' fees. I give Mr. Glascodine leave to appeal. I think, however, it will be useless to appeal.—*Photographic News.*

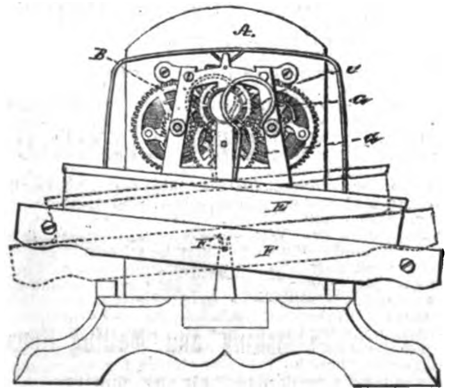
Patent Intelligence.

296,443. PHOTOGRAPHIC PLATE-HOLDER AND CASE. Sebastian S. Peckinpugh and George Jeffery White, Big Rapids, Mich., assignors to said White. Filed Sept. 25, 1883. (No model.)



Claim—The combination, with a plate-holder, of the plate or strip D and the adjusting-screw E, substantially as herein shown and described.

296,578 APPARATUS FOR CLEANING PHOTOGRAPHS. Robert H. Jones, Marcus B. Smith and Lars J. A. Roswall, Clarence, Mo. Filed Jan. 9, 1884. (No model.)



Claim—1. In a machine for washing photographs, the combination of a pan or tank for liquid supported on pivotal bearings, and having attached an arm provided with a yoke, in which an armed crank or cam-wheel operates, so as to swing the tank back and forward, substantially as and for the purpose set forth.

2. The machine for washing photographs herein described, composed of the standard A, mounted on a suitable base, the tray pivoted thereto and provided with an arm G, having a yoke G', at its upper end, and the motor secured on the standard and having one of its shafts provided with a crank operating in the yoke G', substantially as and for the purposes specified.

296,391. ART OF PRINTING BY SUNLIGHT OR OTHER LIGHT, AND APPARATUS THEREFOR. Ezra Cope, Hamilton, Ohio. Filed Jan. 5, 1884. (No model.)

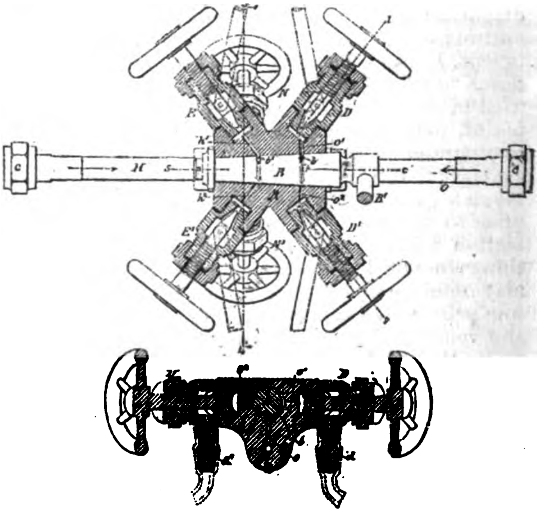
Claim—1. In a sun-printing apparatus, an envelope provided with an exhaust-aperture, and having one of its layers of proper transparency, and one or both of its layers of collapsible limpness, substantially as and for the purpose specified.

2. In a sun-printing apparatus, an envelope provided with an exhaust-aperture, and having one of its layers of proper transparency, and one or both of its layers of collapsible limpness and adapted to receive a sensitive sheet or a negative, or both, substantially as and for the purpose specified.

3. The improvement in the method of securing close contact between the negative and sensitive sheet in the art of sun-printing, which consists in connecting them together and exhausting the air from between them, substantially as set forth.

296,984.—DISSOLVING-COCK. Timothy J. Mapes, Philadelphia, Pa. Filed Feb. 4, 1884. (No model.)

Claim.—1. The combination of the body and main plug of a dissolving-cock and supply-pipes with channels leading from the plug, and needle-valves, substantially as described, controlling said channels.



2. The combination of the body and main plug of a dissolving-cock and supply-pipes with self-contained needle-valves detachably applied to said body, and channels leading from the plug to the valves as set forth.

3. The combination of the nozzles, d d', to which are applied flexible tubes leading to the lanterns of a stereopticon apparatus, with a dissolving-cock having channels, and provided with a plug having grooves b b' of the relative proportions herein set forth, whereby the dissolving effect is produced without diminishing the light on the screen in changing from one lantern to the other.

4. The combination of a dissolving-cock and its handled plug with a bearing-piece, G, and cam-lever F, substantially as described.

296,913.—METHOD OF COLORING PHOTOGRAPHS. Auguste Bisson, Paris, France. Filed Jan. 15, 1884. (No specimens.)

Claim.—1. The treatment of the translucent bodies for the reception of photographic impressions, consisting in subjecting them to the action of a bath composed of benzine, resin, and linseed-oil in or about in the proportions herein specified, substantially as herein described.

2. The improvement in the art of printing photographs in colors, consisting in first obtaining stencil-plates or sheets cut out in the contours of the different colors, next applying said plates or sheets to lithographic stones coated with bichromate, then exposing the said stones and plates, or sheets together to the action of the light and pressure under a glass, then removing the sheets and coating from the stones, and afterward printing from said stones in flat tints, substantially as herein described.

PHOTOGRAPHY.

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By an oversight the pages in the last number of Photography were numbered 1 to 24, instead of 25 to 48.

Subscribers are requested to correct this, as index will be made to correspond with correct paging.

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A quarter of a century is a long time for one man to occupy the presidential chair of any scientific society, and in the case of a photographic society it is probably unprecedented. That, however, is the period during which the late Rev. F. F. Statham, whose death we record on another page, has presided over the destinies of the South London Photographic Society. We need add nothing to the remarks of our esteemed contemporary, the *Photographic News*, reprinted elsewhere in this issue. By Mr. Statham's death photography loses an earnest worker, and a genial, courteous and kind-hearted gentleman.

◆

We publish the following for the consolation of those amongst our readers (and they are doubtless numerous) who cannot afford to pay "fancy" prices for lenses:

At the meeting of the London and Provincial Photographic Association, April 24, the Chairman (Mr. A. Cowan) passed around a series of negatives taken with four of the eighteen combinations of Darlot's set; also a series of the same subjects taken with English lenses of similar focus and aperture.

The Darlot series were not inferior to the others, whereas the same number of combinations from English lenses were very costly.

We have heard similar opinions expressed by photographers here, who have tried Darlot lenses (especially the Rapid and Wide Angle Hemispherical) against Dallmeyer lenses of similar general construction (say the Rapid and Wide Angle Rectilinear).

There is no doubt that the French opticians are now turning out some excellent lenses, and at a price that seems ridiculously low when compared with those charged by the great London and Vienna manufacturers. In fairness, however, we should state that for 'process" and other copying work where microscopic definition is a *sine quá non*, the Hemisphericals have not, so far as we know, met with much favor.

The lens referred to by Mr. Cowan was Darlot's Universal Combination.

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Why cannot we have as good papers read at the meetings of our American photographic societies as they do in England? Such, for instance, as Capt. Abney's paper on "Illumination of the Darkroom, and Some Optical Experiments," Mr. Debenham's on "Lenses" and others too numerous to mention? Probably the first reply that will suggest itself is, that we have not the requisite talent on this side of the water; but this may be dismissed at once as an insult to the fraternity, both amateur and professional. The most plausible reason likely to be advanced is, that in America, where business is conducted on the high-pressure system, no one has leisure to prepare such papers; but this objection will not hold water when examined into; Mr. Debenham, for instance, is a professional portraitist doing a large business, and Capt. Abney's time is undoubtedly more fully occupied than that of many men in America who are quite competent to prepare good papers. We believe the true answer is, that such papers are not appreciated here. There is a vast difference between the average composition of the American photographic society and a similar institution in England.

When a man here does go through the labor necessary to prepare such a paper as Dr. Garrison's really excellent one on dark-room illumination, he is seldom rewarded by any intelligent discussion of its subject-matter, and may be thankful if half his audience is not engaged in conducting a series of small "talking parties" during its delivery. We know that some of the most valuable papers ever read before the P. A. of A. were listened to—or rather, were not listened to—with impatience.

Under such circumstances it is not remarkable that men are disinclined to undertake the labor involved in such work.

We clip the following from one of our English exchanges, but must confess to some mystification as to its meaning:

> "A machine is now being manufactured by a Lancashire firm for the purpose of producing photographic papers, to be coated on the machine in the course of production. Experiments have been made for two years past at a paper mill near London, and the inventor has at last brought his ideas into practical shape."

In his article on "A New Dry-plate Holder," published in our last, Prof. Hough says: "When the ground glass is fixed, however, in the back of the case it is not in focus for the plate, and it is necessary to make an adjustment after focusing. This is not a serious objection, however, as every amateur will soon learn to mark his focus for infinite distance, at which mark *nine-tenths* of all his out-door pictures must be taken." The italics are ours. We call attention to this because it is new doctrine to us, and possibly may be to many of our readers. However, if it is sound doctrine, we are not too old to learn. But it does not agree with the teachings of the text books nor with the precepts of those gentlemen who try to show us how to make artistic work; nor yet with our own practical observation. The latter has taught us that racking out the ground-glass to a fixed mark for all sorts of subjects will only work with very short focus lenses or very small stops, and can only be absolutely relied upon, when both these factors are conjoined. The most approved rule, we believe, is to focus on a point in the immediate foreground, not quite midway between the center and edge of the plate, but a little nearer the edge. Then stop down until the whole picture is sufficiently well defined. Prof. Hough's method will give the distance an unnatural sharpness, destroying atmospheric effect, while the immediate foreground is very liable to be a little "off." If it be considered desirable to have a fixed mark to focus by, it is better to obtain that mark by focusing on the nearest object you are ever likely to include, when, if that is not too near, and your lens of reasonably short focus, everything beyond can generally be got sharp enough without excessive stopping down. We have a pair of No. 2 Zentmayers, for instance, which, if focused on an object six feet from the lenses, will render everything beyond that sharp; and these we work by a fixed mark, but that mark was obtained by focusing on the six foot distance, not on "infinite distance." This is a case, however, where the two necessary conditions are present, for they are only 3½ inches equivalent focus, and, as a necessary consequence of their peculiar construction, must be used with a very small stop.

Lest we should fall under the sarcastic lash of our contemporary, the *Photographic News*, we hasten to explain that the credit note at the foot of right hand column on page 9 of last issue (it should have been page 33) was intended to apply to the entire column, the whole of which, as originally made up, consisted of extracts from our sardonic friend. The intelligent printer, however (what *should* we do without him?) saw fit to change things round, and inserted that article on forgery in place of another. Please, Mr. *News*, let us off this time and we won't do it again!

At a recent meeting of the Liverpool Amateur Photographic Association, the President, Dr. Kenyon, exhibited a plate-holder, made about three years ago by Mr. Sidey, of London, and used by that gentleman ever since, which exhibited a radical departure from the ordinary construction, inasmuch as the slide, instead of being made to draw out at the end, was constructed to open inside the camera.

Dr. Kenyon said of it: "The mechanism, it will be observed, is beautifully simple and most ingenious. A slide of this kind would be most useful in instantaneous work, and wherever it was desirable to have the camera as inconspicuous as possible. The shutter exhibited was lighter and more compact than the ordinary form. Its use presented less leverage to the wind, and less chance of admission of light during exposure. The plate was uncovered far more easily than by drawing a shutter. A rigid camera might be carried ready focussed and exposure readily effected without any one knowing what was going on."

We know nothing of the construction of this plate-holder, but shall endeavor to get a drawing of it, and lay it before our readers; meanwhile, it seems to us that the "plate-holder of the future" will be constructed on a similar principle. The arrangement certainly presents many advantages, and, if it can be cheaply manufactured, will leave Prof. Hough's holder, described in our last issue, "miles behind." For large sizes, especially, the projecting "extension box" in the latter offers so much surface to the wind that it would be almost impossible to use it in a good breeze.

On the other hand, there is no doubt that many plates are fogged in drawing out or re-inserting the slide in an ordinary holder; whereas, if the shutter was made to open inside the camera, as in Mr. Sidey's arrangement, fogging from this source would be an impossibility.

We suggest this subject as a fruitful one for those of our readers who are of an inventive turn of mind.

In his admirable lecture on "Lenses," recently read before the London and Provincial Photographic Association, Mr. W. E. Debenham makes the following remarks:

"While on the subject of 'diffusion,' or 'depth' of focus, it may be remarked that a delusion on this point is cherished by a vast number of photographers. For this the manufacturing opticians are somewhat to blame. They have been in the habit of advertising lenses as having great 'depth of focus,' whereas that is a quality that, except as attained by the use of a small aperture or diaphragm,—involving slowness of action—does not exist at all. Still, many photographers—careful, practical men, too, some of them—will tell you that they have, or have had, some particular portrait lens that will give the various parts of a sitter's head, the background behind him, and generally, objects in different planes, with sharper definition than other lenses of similar aperture and focus that have as fine or finer definition in any one plane. This is a curious case of mistaken observation; but in photography, unfortunately, mistaken observations may pass current as scientific facts."

We have frequently heard similar statements ourselves, and publish the foregoing in order to correct a misapprehension, which is only too prevalent. As Mr. Debenham points out, in another part of his paper, depth of focus, correctly so called, depends on the angular aperture, and will be alike for all lenses of the same focus and worked with the same opening of diaphragm, and any apparent variation in this respect must be due to the difference in maximum definition between individual lenses. That is to say, one lens may seem to have more depth than another, because it is incapable of giving as good definition in any one plane, and therefore, yields an image about equally sharp over several planes. And here we may remark, that, *cœteris paribus*, that lens which, with full opening, has the least apparent depth of focus, will be the best every time. Outside of portraiture, at any rate, this rule will apply, but for gallery work, it is possible that flatness of field may be of more consequence than absolute sharpness; and, as Mr. Debenham explains, flatness of field can only be obtained by sacrificing other qualities, definition amongst them, on account of the astigmation unavoidably introduced. And the slight falling off in sharpness thus produced, will, of course, make the lens seem to possess rather more depth.

Mr. Debenham refers to Dallmeyer's patent back-lens, in which the distance between its two elements could be varied by screwing the cell of the negative lens in or out; in this way it was claimed "diffusion of focus" could be obtained. "This claim," says Mr. Debenham, "was shown to be mistaken, and is no longer made."

The fact being that, supposing the lens to be focussed on a particular plane, no improvement in definition in other planes could be obtained by any change in the relative position of the two components of back-lens, but by throwing the sharpest plane a little out of focus, the difference became less marked, and gave the impression of improvement in the other planes.

We append the fol'owing extract from the editorial columns of the *Photographic News* in corroboration of the above remarks:

"Although the calculation involved in discovering the defining quality, the curvatures of field, and the amount of astigmatism given by any lens are most difficult and complicated, there are some facts concerning lenses which are so easily understood and calculated, that it is wonderful they are not better known

To take a couple of examples: The amount of depth of focus which a lens exhibits is absolutely fixed by the aperture of the lens, and by the focal length of the lens. It decreases as the aperture increases, and decreases as the focal length increases; any apparent departure from this rule being caused by differences in the maximum sharpness given, which may make it *appear* that with different lenses of the same aperture and focal length there are different depths of focus. This rule is absolute with our present knowledge of optics, and it appears likely that it may remain so, although it is dangerous to predict in such a case."

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"The rapidity of a lens depends on the ratio of the aperture to the focal length, increasing as the ratio increases. Assuming that the lenses are not stained, and making a very slight allowance for different degrees of concentration of the pencils of light between the front lens and the diaphragm, this law also holds absolute'y true through a moderate angle."

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Every month sees photography employed, more and more in book and periodical illustrations. One of the most spirited pictures in an elaborate number of the Paris "Figaro"—notable, by the way, in addition, from the fact that the whole of the illustrations are in some form of "process," and in every sense are works of art—is a colored sketch entitled "A Gust of Wind." The effect of the wind is conveyed in a singularly truthful manner—a circumstance, however, not to be wondered at, seeing that the picture was instantaneous photography. The "Graphic" has long made use of photography, and the frontispiece in the New Year's number was drawn also from an instantaneous photograph. But, perhaps, the most striking example of a photo-illustrated journal is "Scraps," a paper which in a few weeks from its birth has attained a very large circulation. All the pictures, with but very few exceptions, are photographic reproductions, the majority from original sketches, and it may be said with truth that without photography such a paper would be impossible.—*Photographic News*

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The Photographic Society of Ireland announces an exhibition of photograph and photographic appliances, to be held in Dublin, in November next.

STARVED ROCK AND VICINITY.

BY PROF. E. S. BASTIN.

Not the least benefit conferred by the modern invention of dry plate photography is the keen appreciation of natural scenery that it cultivates in lovers of the art. Even the amateur comes to see pictures everywhere. Not even the monotonous prairies close to our city limits can cheat him of this pleasure, and who will dare say that this, like most other real pleasures, does not tend to prolong life?

But while we tender our thanks to camera and dry-plate for enhancing our enjoyment of our home scenery, they are no less thankworthy for stimulating in us a spirit of exploration and adventure. The amateur photographer is not content with parks and boulevards, and lake shore sand dunes, or instantaneous views of yachts and trotting horses, but sighs for new worlds to conquer, and in order to point his camera at some bit of new and interesting scenery, he is as ready for an early start and a long tramp as the proverbial duck-hunter, and his legs know as little of weariness.

One Friday night, a few weeks ago, just after the first warm breath of spring had melted the winter's snows, two amateur photographers, fully armed and equipped with camera and dry-plates, might be seen wending their way to the depot of the C., B. & Q. R. R., bound for Utica. We had heard and read a good deal about Starved Rock and the picturesque scenery in its vicinity, and one of us had in former years visited the place only to have his appetite whetted for further exploration in the same locality. We consulted the weather reports and carefully noted the condition of the barometer and found that everything augured a fair day for photographic tramps on the morrow. As we had to change cars at midnight at Mendota we contented ourselves with such snatches of sleep as we could get in an ordinary passenger car which happened to be both crowded and cold. We reached La Salle at day light and by 8 o'clock or a little before were through our breakfast at Utica and ready for the day's tramp. The Illinois river here runs between nearly perpendicular bluffs of sandstone which are from half a mile to a mile apart. It is in fact a valley of erosion which has been cut by the river, and there is abundant evidence that the stream at one time, probably during the glacial epoch or immediately succeeding it, was a majestic river, and its waters may have extended from bluff to bluff, instead of being confined within the present contracted channel The sandstone is of a peculiar kind, belonging to what geologists call the St. Peter's sandstone formation, one of the formations of the Lower Silurian. In many places the rock has disintegrated by exposure to the weather, and the calcareous cement having been dissolved out by percolating waters, the pure sand is left as clean and dazzlingly white as driven snow. In fact this sand is used at Ottawa and La Salle, and even in the large manufactories of Pittsburg for the production of fine qualities of glass. It is only, however, certain strata of this rock that are composed of such pure and friable sandstone. It is interstratified with firmer rock. For this reason the erosion of streams has worn the rocks into very interesting and often picturesque forms.

Every little brook and run that enters the Illinois between Ottawa and La Salle has cut its canyon through these rocks, and most of the canyons have at their head a fall.

Our first trip was up one of these canyons called Clark's Glen. The gorge is upwards of a mile in length, tortuous, and with precipitous walls that must at times attain a height of upward of a hundred feet. The gorge is seldom more than ten or fifteen rods in width, and the walls are often quite perpendicular or even at times over-hanging, owing to the fact that the sandstone below is softer than that above, and the little stream that has done all this work of erosion—so small that we can almost leap across it—has rounded out broad caverns and recesses in the rocks. The sides of the rocks are clothed with varieties of evergreen ferns, club-mosses and ordinary mosses, and the yew and arbor-vitæ and here and there a stately pine are growing triumphantly in situations far too insecure for human foothold. At every bend in the gorge we found a picture to delight the heart of the photographer, and the expressions of delight that escaped us as we surveyed them on the ground glass were more worthy of a school-girl gathering the first spring flowers than of sedate men like ourselves. But we had brought with us from the hotel only six plates apiece, and we resolved to reserve these until we had seen the whole canyon, and then expend them on the worthiest views. It was well we did so, for presently we reached the falls and were surprised and delighted beyond measure that anything so beautiful in the way of natural scenery could exist so near Chicago and not be more widely known.

We both agreed that for quiet beauty they were not excelled by Minnehaha, although, unfortunately, in the dry season the beautiful sheet of water we beheld dwindles to an insignificant streamlet. But in season of high water it is certainly one of the most charming cataracts we ever beheld. The head of the canyon was a broad amphitheater with lofty overhanging walls. High up, the sides were sloping and thickly clothed with ferns and evergreens, and here and there a tall pine clung to the rocky wall. The little stream came rushing down through a narrow and deep gorge at the head of this amphitheater-like area. and with one leap plunged a distance of forty feet or more into the deep and almost circular basin of clear water below. Here, and at another fall scarcely less interesting, a few rods above, we exposed all of our dozen plates and returned to the hotel, regretting we could not linger longer to admire and enjoy, and we blamed ourselves for not having brought with us a larger supply of plates.

But other attractions awaited us. We must at any rate visit Starved Rock. So, hastily gathering up the remainder of our luggage, we started thither. It was a good two-mile tramp, and when we reached the farm-house that stands near the base of the rock we were ready to rest and refresh the inner man. After dinner, to which we did ample justice, we made the ascent to the top of the rock. This was done partly by means of a natural stairway of stone, and partly by means of an artificial one of wood, situated on the south side of the rock opposite the river. All the other sides are perpendicular or, in places, overhanging. Once on top, we found ourselves on a level area of about half an acre in extent which was covered with clumps of cedars and other evergreens, and which was full two hundred feet above the level of the river.

The view from this elevated position up and down the Illinois valley was a surprisingly beautiful one. Far away to the east we could distinguish Buffalo Island, and the smoke, and spires of Ottawa, nearer by a rock called "Lovers Leap, and to the west down stream the tall chimneys at LaSalle. The rock derived its name, as is well known, from the circumstance that here more than a century ago the remnant of the once powerful tribe of Illinois Indians were besieged and starved by their mortal enemies the Pottawatomies and Ottawa Here were destroyed, either by starvation or massacre in their attempt to escape, all but eleven of the nation that once owned the State of Illinois and gave it a name.

After enjoying the scenery for a time and pondering upon the memories recalled by the historic spot, we made our descent by a narrow, tortuous passage on the northern side. The path lay under the overhanging rock, winding around and emerging below on the east side. It was difficult and dangerous, a slight misstep or a slip would have precipitated us, cameras and all, a hundred feet or more into the river below, so we breathed somewhat freer when at last we reached the bottom. We then explored the ravines along the river and found a great deal of wild and interesting scenery, precipitous rocks, gorges and cataracts. We found no lack of subjects for pictures; there was wild and picturesque scenery everywhere, and we found that it would require a week instead of a day to see all there is of interest in this interesting locality. It was nightfall when at last we reached our hotel wearied out and prepared for a solid night's sleep by our long day's exciting tramp. We returned home next day resolved that this should not be our last visit to Utica, and to any of our photographic friends who, like ourselves, are lovers of natural scenery, and who are so situated that they can take a vacation of a day or two, we would say, by all means pay a visit to Utica and vicinity.

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PHOTO-MICROGRAPHY IN LEGAL CASES.

BY W. T. BELFIELD, M. D., CHICAGO.

Among the numerous applications of the art-science of photography, none is more satisfactory and gratifying to the operator than photography with the microscope in legal cases. It is indeed the only way for conveying to judge or jury absolutely accurate and faithful conceptions of the microscopic appearances upon which the expert microscopist bases his evidence.

It is naturally and notoriously difficult to present technical evidence clearly to a jury; and this difficulty arises not necessarily from any lack of intelligence on the part of the jury, but simply from their lack of technical knowledge of the subject in question. The difficulty is especially great in presenting facts obtained through the microscope, because a knowledge, even elementary, of this instrument and its revelations, does not form a part of popular information, but is confined almost exclusively to students in various branches of science. Yet it is desirable in many cases to impart to the juror such information as will enable him to comprehend at least the general principles upon which the expert's evidence rests. Suppose for example a microscopist is called upon to decide that most frequent of all questions submitted to him in legal cases—whether or not a given stain is made by blood, and if so whether this be human blood or that of a domestic animal. The microscopist states to the jury that the stain is composed of blood, because he recognizes in it the characteristic bodies known as "blood corpuscles;" and he asserts that this blood cannot be that of a sheep for example because the corpuscles are larger than those found in sheep's blood. The jurors whom he addresses, no matter what their grade of intelligence, have in all probability never seen a blood corpuscle and possibly never heard that such objects existed. To them blood is blood – a red, sticky fluid which presents the same appearances whether drawn from a man, a sheep or a chicken.

It is therefore desirable to exhibit to them some representation of a blood corpuscle, and if possible to demonstrate to them the fact that the blood corpuscles obtained from different animals present characteristic differences in size, contour and structure, whereby these different bloods can be distinguished one from another.

For the purpose of such demonstration any one of three methods may be employed: 1. The actual exhibition of blood corpuscles with the microscope; 2. The presentation of drawings of the same; 3. The production of photographs of blood corpuscles.

Now the exhibitions of blood corpuscles with the microscope can rarely if ever be satisfactory to a jury. For comparatively high powers must be used; the distinction between human blood corpuscles and those of other animals for example is made with a power of not less than 800 to 1,000 diameters. Now an individual who is not familiar with the microscope rarely sees blood corpuscles with a high power; his attention is arrested by particles of dust or other extraneous matters which stand out more prominently in the field of vision, but which the experienced observer ignores as unimportant. If sufficient time could be allowed, the microscopist could of course point out definitely the objects of importance and assure himself that the juror had obtained a definite conception of them; but in the hurry and confusion of the court room, such tedious individual instruction of jurors is impossible. Even though it were practicable to demonstrate blood corpuscles to the jury with the microscope, it would be impossible to show them clearly the differences between the blood corpuscles of different animals– a point quite as important as the conception of a blood corpuscle. For in order that he might see and realize these differences and the various methods for measuring them, the juror would require a special course of instruction in the use of the microscope.

The writer has repeatedly permitted the urgent solicitation of counsel to overrule his own judgment, and has exhibited objects to jurors with the miscroscope. In only one case—the recent trial of Orrin A. Carpenter, in which indentations on hairpins were shown with a low power—was the exhibition at all satisfactory or convincing. In the majority of cases it was evident that the jurors, while professing to see distinctly the object in question, had obtained no definite idea of the form, outline or even existence of the alleged object. It has always seemed that such an exhibition was not only useless but even detrimental to the interests of the truth as well as to the standing of an expert witness. For the inexperienced eye of the juror does not see in the microscope the same picture which is revealed to the practiced expert; hence the former's indistinct impressions derived from the instrument serve not to assist but to confuse him in the effort to comprehend and appreciate the expert's evidence. The production of the microscope on the witness-stand is moreover in questionable taste, since it seems to be an attempt to impress the jury with the expert's technical knowledge of matters which are to them unfamiliar and mysterious; it may even suggest a suspicion of partisan feeling on the part ot the witness, an anxiety on his part to take advantage of their technical ignorance in order to force upon them a semblance of science in support of the side by which he is summoned.

The attempt to exhibit objects in court with the microscope is therefore in my opinion worse than useless. The evidence furnished by the expert microscopist carries much or little weight according to the scientific standing of the witness; and this is determined not by the parade of his instrument in court, but by his reputation among his scientific associates.

Yet while the attempt to convince a jury by demonstrations with the microscope is thus to be deprecated, it is certainly desirable to illustrate to them so far as practicable the facts which bear upon the case in question. Thus while it is impracticable to demonstrate to a jury with a microscope the differences between human and sheep's blood, it is quite desirable to convey to them a conception of a blood corpuscle as well as of the means whereby a distinction between different blood corpuscles can be recognized.

For purposes of such illustration, drawings made from the microscope would be admirably adapted, were they not open to one serious objection—inaccuracy. For, granting the honesty and skill of the artist, it is nevertheless evident both in theory and practice that a drawing carries no assurance of fidelity to nature in detail. For the artist draws with a fallible hand, directed by a fallible judgment, the picture seen by a fallible eye; moreover in order to draw a microscopic picture it is necessary to project the image by means of a mirror or a prism, whereby sources of error quite foreign to the microscope itself are introduced.

There is moreover another objection to drawings as evidence; for, admitting the perfect honesty and sincerity of the draughtsman, the possibility of an unconscious bias cannot be denied, since it has often been demonstrated. It is well known to microscopists that drawings made by enthusiasts are far more distinct and decisive than the objects which they purport to represent—not because of intentional deception, but simply because the hand portrays, often unconsciously, the conception inspired by the object rather than the object itself. This liability to unconscious error is of itself sufficient to vitiate the value of drawings as evidence in legal cases where every possibility of error must be excluded.

Hence, while drawings made with the microscope are admissible as means of general *illustration*, they are totally inadmissible as *representations* of absolute accuracy and fidelity to nature. Thus drawings may serve to illustrate in a general way the shape and size of blood corpuscles; but if the object be to demonstrate the difference between the blood corpuscles of man and of a sheep, for example, drawings are inadmissible, since they cannot be affirmed to be accurate representations of either human or sheep's blood corpuscles.

The photograph is the only method which we at present possess whereby accurate and faithful representations of microscopic objects can be presented to individuals who are not familiar with the instrument, therefore to a jury. Granted the honesty and sincerity of the operator and this is assumed for all expert witnesses

—there remains no possibility of misrepresentation except such as may arise through the imperfection of the microscope itself; and such objection applies just as forcibly to the picture formed in the retina as to that produced upon the photographic plate. The photograph represents the picture precisely as it appears to the eye (minus the color, of course); to present the photograph is therefore to furnish the inexperienced observer with the eye of an expert so far as the particular object represented is concerned. The photograph presents to one unacquainted with the instrument a far better and more accurate picture than can be obtained by direct inspection through the microscope itself.

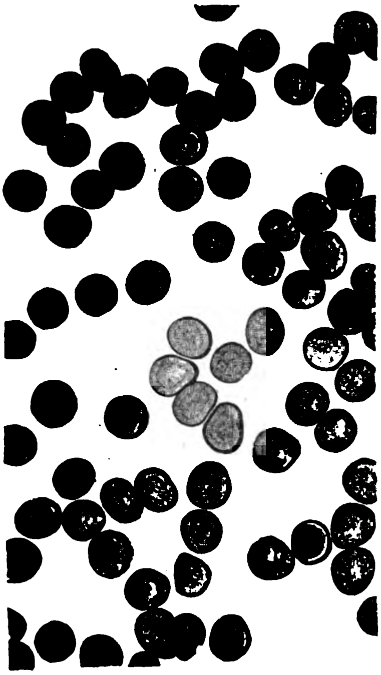


Fig. 1.

For purposes of illustration the accompanying cuts made from photographs prepared by the writer are presented. Fig. 1 is made from a photograph of human blood corpuscles magnified 1025 diameters, (more than one million times.) Fig. 2 represents sheep's corpuscles magnified to precisely the same degree, and figure 3, the corpuscles from the blood of a chicken similarly magnified. The blood corpuscles of man and of the sheep, like those of mammals generally, are of circular outline, while those of the chicken as well as of all other birds, are of elliptical form. Each of the chicken's corpuscles i seen to contain also a circular body which occupies the central portion of the corpuscle and is called the nucleus. The blood corpuscles of reptiles and fishes resemble those of birds in that they are of elliptical outline and contain nuclei. By these characteristics they can be therefore readily distinguished from the blood corpuscles of man and the other mammals. Hence, a murderer makes a fatal mistake when he asserts that a given blood stain found upon his clothing is that of a bird. Most criminals avoid this error, presumably upon the advice of their lawyers; but in a case in which I was recently employed in Ohio, the accused had, unfortunately for himself, asserted at the time of his arrest that a suspicious stain was made by the blood of a chicken he had killed about the time of the murder. As the blood corpuscles obtained from this stain were of circular form and devoid of nuclei, the untruthfulness of his assertion was easily detected and demonstrated to the jury by means of photographs.

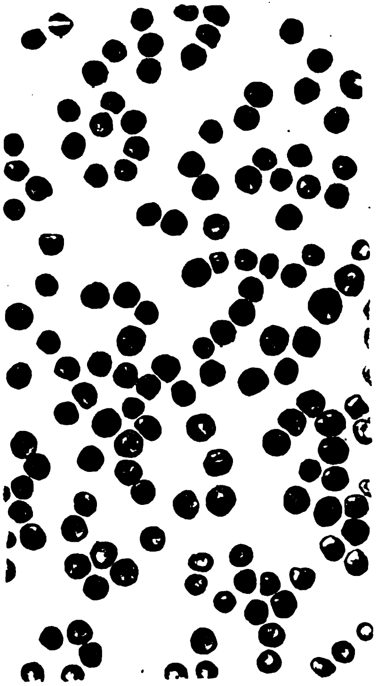


Fig. 2.

The distinction of human blood from that of other mammals is more difficult. For since in all mammalians (with two exceptions) the corpuscles are circular and devoid of nucleid, a distinction among them, can only be based upon the average sizes of the corpuscles in the different animals. Now there are several animals—the opossum, kangaroo, seal, and beaver for instance

—whose corpuscles approximate so closely those of the human animal in size that positive distinction is impossible. Among the domestic animals, fortunately, there is only one whose blood corpuscles cannot be distinguished from those of man, and this animal, the dog, is not usually asserted to have furnished a suspected blood stain. The blood corpuscles of the animals regularly slaughtered for food—the cow, hog and sheep—as well as of the horse, goat, and cat, are so much smaller than those of man that a skillful microscopist can easily detect the difference. A comparison of figures 1 and 2 may serve as an illustration.

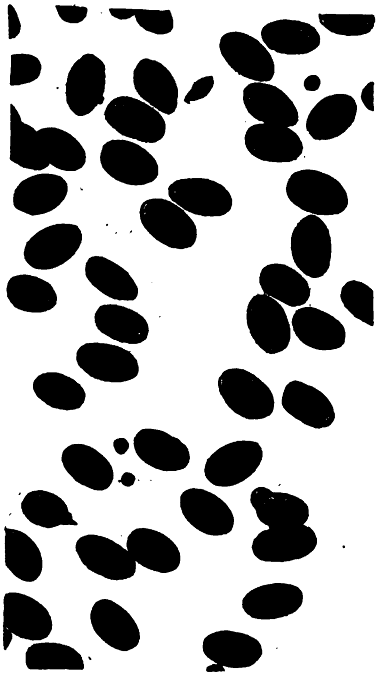


FIG. 3.

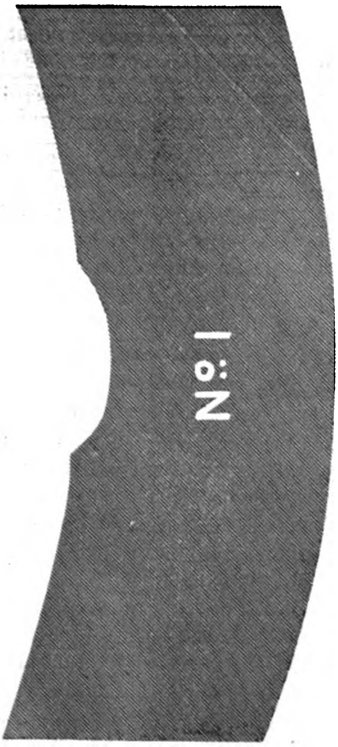
The remaining figures illustrate another of the numerous applications of photo-micrography in legal cases.

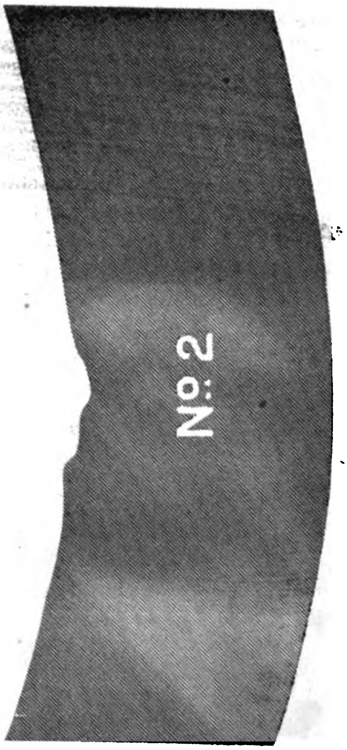
These cuts are made from photographs of hairpins, taken by means of the microscope. I was induced to submit hairpins to microscopic examination some months ago under the following circumstances: In the pocket of Zura Burns, found murdered at Lincoln, last October, was found a single hairpin; in the buggy of O. A. Carpenter, suspected of having perpetrated the murder, were found two pins, one of which appeared to be the exact counterpart of the pin found in the girl's pocket. The prosecuting attorney inquired of me whether or not the microscope would reveal additional proofs of the similarity of the two pins. I had at that time never made a critical examination of hairpins with the microscope, and was not aware that such examination had been made by others; I so informed him. I was commissioned to investigate the subject.

These two pins were of the pattern known as "crimped" or curvilinear hairpins; I therefore directed my investigation to the structure of these pins and the mode of their manufacture. I found that these "crimps" are made by a punch which bends the wire; and it became evident that the pins made in the same machine would probably exhibit the same punch marks or indentations at the curves. An examination of numerous packages of crimped hairpins showed that such was actually the case; all the pins from a given package as bought in the store, showed precisely the same marks at the same points on the pin. Pins of different manufacture, even though similar to the naked eye, showed different punch marks, corresponding to their production in different machines. Figs. 1 and 2 are specimen punch marks, the two pins photographed having been obtained from different packages. The picture represents of course merely a small fragment of the pin, magnified 50 diameters; the length of the entire pin thus represented would be about thirteen feet.

All of the hairpins contained in the package from which the one pictured in fig. 1 was taken, exhibit the same indentation at the same point on the pin; all of those in the package from which the second hairpin was taken, exhibit the same mark as is pictured in fig. 2. However close the resemblance to the naked eye, therefore, such pins can be readily identified or distinguished with the aid of the microscope by means of these marks.

The two hairpins already mentioned in connection with the Carpenter case were sent by express to my address; one of them—that found in the girl's pocket—was unfortunately lost *en route*. Upon examining the other with the miscroscope, I found that it presented four distinct machine marks, the most prominent of which is represented in fig. 3. The loss of the other hairpin seemed at first to vitiate the value of the information which might possibly be derived from a comparison of the two. However, it was ascertained that on the morning of her departure from home (in St. Elmo) for Lincoln, the girl's father had purchased for her at a country store a package of pins, some of which she had used in making her


No. 1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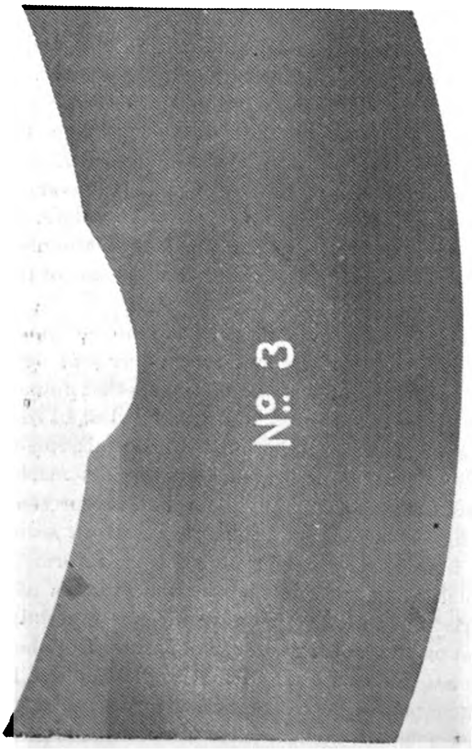
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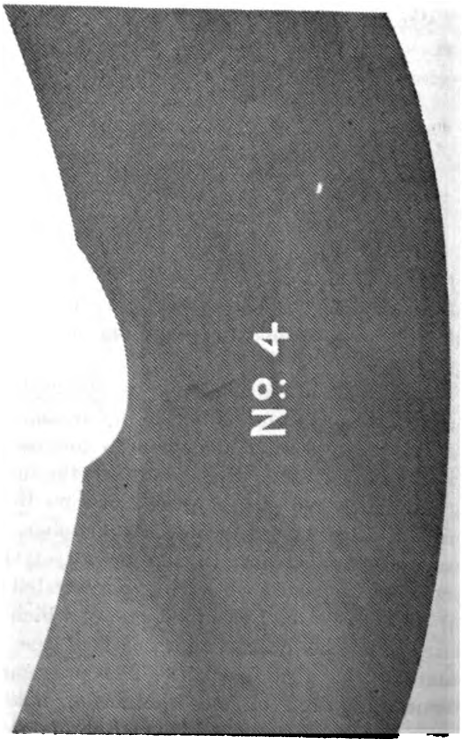

No. 4

toilet, the remainder being placed in her pocket. The prosecuting attorney forthwith bought all the hairpins in stock at the store where this purchase had been made. The stock was found to consist of the one variety of pin from which a small package had been sold to the girl's father. Microscopic examination of these pins showed precisely the same machine markings as were exhibited by the pin found in Carpenter's buggy. A photograph of the indentation on one of these pins from the St. Elmo store is copied in fig. 4. I was thus enabled to assert that the pin found in Carpenter's buggy must have been made in the same machine as those used by the girl just before the murder.

These pins were moreover of a peculiar pattern; among eighty packages purchased in Chicago and in Lincoln, and some twenty odd hairpins obtained at random, I did not discover a single pin exhibiting the same markings. The scarcity of pins of this pattern was afterwards explained by the fact that the factory in which they had been made was closed several years ago. The rarity of hairpins made in this particular machine combined with the presence of one of them in Carpenter's buggy, rendered it highly probable at least that the girl had ridden in this buggy.

A series of photographs made with the microscope and showing the machine markings of hairpins was presented in evidence; the cuts accompanying this article are made from four negatives of that series.

PLATINUM TONING.

BY A. HESLER.

At the editor's request I will repeat for the benefit of the readers of PHOTOGRAPHY my experience with platinum toning. Prints that I toned with it twenty to twenty-five years ago show at this day no appearance of fading; but that alone will not prevent prints fading, as the prime cause of faded prints is the presence of sulphur. That comes from the too frequent use of hypo. This should never be used but once, or at most twice, and the prints should always be washed in warm or tepid water. By frequent changes and being kept constantly in motion, half to one hour of this treatment will do more to free the prints from impurities than twenty-four hours' or a week's soaking in cold running water. A few years ago some one in New York (I think it was Sarony) started the fashion of making sepia colored prints. These have all faded so far as my observation goes. Prints should always, in toning, be carried to the black. Prints so toned, with either gold or platinum, and proper washing and fixing, are just as permanent as steel engravings. For the benefit of those who wish to try the platinum toning, I will give how I use it. I will say here that I make both my chloride of gold and platinum, as it is less trouble than to send to the dealers for it and costs much less. Pure gold can always be had at the dental depots, or the old fillings that dentists accumulate can be had for $1 per dwt. or the pure gold rolled in ribbons at the dentists' supply stores for $1.10 per dwt. To five dwts. of this take ½ ounce to 1 ounce of nitric acid, and three times the amount of muriatic acid, place this in, say a 1 lb. empty silver bottle and place this in a bowl of hot water, set outside, keep water hot, and the gold will dissolve in 10 to 15 minutes. Now place in a large bottle, (1 gal.) add one ounce water and put in chalk or Paris whiting, a little at a time, until effervescence ceases; now fill with water to make it one grain to the ounce of water. Dissolve platinum in the same way, only it requires more heat and takes longer to dissolve. To tone take equal parts each of gold and platinum. To those who wish simply to make the trial I would recommend they buy the chlo. platinum at the supply stores. The metal costs about $8 per ounce, or half the price of gold. The chalk will precipitate and leave an excess in the bottom of the stock bottle; it will test slightly acid and keep indefinitely. If your prints are made slightly alkaline one grain gold and platinum will tone four to six sheets paper. After washing out the free silver from the prints, say two washings, place in a solution sal soda, 4 ounces sat. solution to two gallons water. In five to ten minutes pour off and add water enough to float and take from this into the toning, which is simply plain stock and water. Have it about blood warm; the prints will tone quicker. The toning solution is always kept and added to from day to day the amount required for the prints you have on hand. To aid in the gradual washing out the hypo. after clearing, put in a salt solution; this will partially prevent blisters. The best prevention for this evil is to keep your paper in a rather moist place just so it will not be hard and horny.

THE PLATINUM PRINTING PROCESS.

We are informed that Mr. T. H. McCollin, who controls the Willis Platinum Printing Process in the United States, has notified stock dealers that they may hereafter sell platinotype materials to any one, licensees or not,—which we construe to mean that hereafter no license fees will be required In view of this, and seeing that the process possesses many advantages, especially for amateurs, we publish below full instructions for working the process, as issued by the patentees:

GENERAL DESCRIPTION OF THE PROCESS.

The sensitized paper, containing only salts of iron and platinum, is exposed under a negative or in the solar camera in the usual manner; it is then floated for two or three seconds on a hot solution of oxalate of potash; after this it is washed in a weak solution of citric acid, and finally in water.

SENSITIZING.

The operation is a very important one and upon it the success of the printing mostly depends. Should any failures arise they will in most cases be referable to errors in sensitizing. The instructions given should be very strictly adhered to.

The operation of sensitizing should be conducted in a room lighted by a yellow, or very feeble white, light, or by gas.

For contact printing the sensitizer is made by dissolving 60 grains of the platinum salt in 1 ounce of the iron solution (red label). To facilitate the solution of the salt it should be well stirred with a glass rod until all of it is dissolved. The sensitizing solution should be used as soon as it is made, otherwise decomposition is likely to occur, especially in warm weather. As a rule the solution will keep perfectly good for half an hour. Sensitizing solutions which have decomposed give flat prints with impure whites.

For contact work on the smooth 18x22 paper, a little less than two drachms of the sensitizer will be found sufficient to coat a sheet.

The paper should be placed face upwards on the special glass-topped table and secured there by the side springs. A little less than two drachms of the sensitizer should be put on the middle of the sheet; it should then be spread over the surface in as even a manner as possible by the special squeegee.

For contact work on the sized rough paper, the same quantity of the sensitizer may be employed, but the coating is better distributed by means of a small pad of flannel made soft by a tuft of cotton placed inside.

As soon as sensitized, the paper should be hung up by two corners until the moisture has disappeared from its surface; this should take ten minutes: it should then be made *perfectly* dry by warming before a fire or stove. (It is of the utmost importance that the paper be made thoroughly dry).

It is very important to allow a sufficient time to elapse between the sensitizing and drying. If the sensitized paper be dried too soon some of the image will float off in the developing bath and there will be a partial destruction of half tone. On the other hand if it be not dried say within twelve minutes after sensitizing, there will frequently be a tendency to flatness and the image will probably be too much sunk in.

When the air is very dry it is necessary to create a moist atmosphere in the sensitizing room by watering the floor or walls in order to prevent the paper from becoming too rapidly surface dry. A damp cupboard or damping box may conveniently be used for this purpose.

For solar work and for all prints to be finished in crayon, ink, water-color, or pastel, the sensitizer is made by dissolving 40 grains of platinum salt in 1 ounce of the iron solution (black label marked "Solar"). This sensitizer should be used at once.

Three drachms of the sensitizer will be found sufficient to coat a 25x30 in. sheet. Other sizes of paper will require a proportionate amount of sensitizer.

The paper should be placed on a plate of glass and should be held in its position by clips or by any other suitable means.

The sensitizer should be applied to the sheet, by a tuft of clean cotton wool, in as even a manner as possible.

When the sheet has been sensitized it should be allowed to become *surface* dry and then be *perfectly* dried before a fire or stove, or in a hot drying cupboard. Great care should be taken to dry the paper thoroughly, but without scorching it.

The remarks above made as to the time which should elapse between sensitizing and drying of paper for contact work, apply equally to paper for solar work; for the latter, however, five to eight minutes are sufficient.

To prevent streaks and stains the flannel should be removed from the squeegee as soon as sensitizing is completed, and washed in the clearing solution and then in water; flannel pads must be treated in like manner; tufts of cotton employed for solar work should be discarded and fresh ones taken every fifteen minutes; sensitizing tables must be kept perfectly clean.

EXPOSURE TO LIGHT.

The sensitized paper before exposure to light is of a yellow color. During exposure the parts affected by light become of a pale grayish-brown color, and finally of an orange tint (sometimes very dingy). When the last change has occurred it indicates that the iron salt has been completely deoxidized, so that further action of the light produces no more effect on it. When printing from a negative having strong contrasts it is frequently found that the deepest shadows of the print are of this orange tint and are lighter in color than the parts rather less exposed to light. Parts. in which this change has taken place are said to be solarized

The correct exposure is ascertained by inspection of the paper in a very weak light in the usual manner. A little experience will enable the exposure to be determined very accurately.

As a general rule the exposure is complete when the *detail in the high lights* becomes *faintly visible.*

As soon as the exposure of each print is complete, the print should be placed in a tin can or other suitable receptacle, containing a little dry chloride or calcium, to preserve it from moisture until it is developed.

DEVELOPMENT.

Development should be conducted in a feeble white light, or gas light.

It may be proceeded with immediately after the print is exposed, or more conveniently at the end of the day's printing.

The developer is made by dissolving 130 grains of oxalate of potash in each ounce of water. A large quantity of this solution may be made up. It will keep indefinitely. The solution should be made faintly acid by oxalic acid.

The development of contact prints is effected by floating the printed surface of the paper for a few seconds on this developing solution, which is conveniently contained in a flat bottom dish of enameled iron or of porcelain, supported on an iron tripod. A Bunsen burner, with rose-top to spread the flame, forms the best means for supplying the heat; or a spirit lamp may be used. If a porcelain dish be used, care should be taken to prevent the flame from impinging directly upon it.

A temperature varying between 170° and 180° Fahr. may be considered the standard temperature for the developer.

The bottom of the developing dish should be covered with the developing solution to the depth of at least half an inch.

For prints on rough paper it is better to stir up the developer between each development in order to destroy any scum which may form.

After the batch of prints has been developed, the solution should be put in a bottle for future use. Before again using this solution for developing it should be decanted from any green crystals (of no value) which may have formed, and then enough fresh oxalate of potash solution should be added to it to bring it up to its original bulk.

To develop large solar prints, a V-shaped earthenware trough should be used. A sufficient quantity of developer should be heated in this trough by a row of small gas jets placed underneath, or by any other convenient device.

The print is developed by being slowly and steadily drawn through the liquid at the bottom of the trough; it is held under the surface of the liquid by a heavy glass rod; this glass rod revolves as the print is drawn under it. To perform this operation with ease it is better for two persons to be engaged about it. One should hold the lower edge of the print, dip it into the trough, then place the glass rod over it and begin to pull through slowly and steadily, the other person holding the upper edge, lowers the sheet easily in a corresponding manner.

CLEARING AND WASHING.

The developed prints must be washed in *two* baths of a weak solution of citric acid to clear them. The solution is made by dissolving 1 ounce of citric acid in 30 oz. of water.

As soon as the prints have been removed from the developing dish, they should be immersed face downwards in the first bath of acid, and after they have remained in it for about ten minutes they should be removed to the second bath, in which they should remain another ten minutes. While the prints remain in these acid baths care should be taken to move them so that the solution has free access to their surfaces.

The first bath may be used for two batches of prints; it should then be thrown into the residues.

The second acid-bath must always be made with fresh solution. This solution after having done duty as the second bath, may be used again as the first bath for a succeeding batch of prints.

On no account should the prints be placed in plain water on leaving the developer.

After the prints have passed through the two changes of acid, they should be rapidly rinsed, and then well washed in two or three changes of water during about half an hour. They are then finished.

The object of this washing in acid and water is to remove the iron salt with which the paper is sensitized.

These prints being on plain paper are better dried across glass rods or tubes, or hung up by clips. If wooden rods or strings are used for this purpose they should be kept very clean, otherwise stains are likely to occur.

PRECAUTIONS AGAINST DAMP.

To secure the most brilliant results the sensitized paper *before*, *during* and *after* its exposure to light, should be kept as dry as possible.

It is of the first importance that the printing frames and pads be quite dry. Between the sensitized paper and the pads a thin sheet of vulcanized india rubber may be placed with great advantage.

The effect of damp is seen in a want of vigor, a general muddiness of tone, and where the sensitized paper has been exposed to its influence for some days in the impaired purity of the whites. Paper in a damp state takes much longer to print than dry paper.

RESIDUES.

The acid clearing baths, after use, should be thrown into a barrel containing some pieces of zinc, which will reduce the platinum held in solution and throw it down in the form of a powder. Trimmings should be burnt and the ashes preserved.

Photography of Yellow, Blue, and Other Colors in the True Proportion of their Intensity.

BY DR. H. W. VOGEL.

Three weeks ago I communicated the fact that I had been able, after some eleven years of investigation, to prepare collodion plates which were at least eight times more sensitive to the yellow of the spectrum than to the blue, and in support of this statement I forwarded to the editor of this journal a photograph of the table of colors in my Manual, in which the blue, the yellow, and the rose were reproduced in the true proportion of their brightness. This solution of a problem that has been so long encompassed with difficulty created a good deal of interest in scientific and photographic circles, and its importance in connection with the work of reproduction was at once recognized. The Berlin Society for the Advancement of Photography, in consequence, decided to acquire the process for the purpose of publishing it for the general good.

In accordance with the above understanding, I now communicate the whole process. I will begin with purely practical details. leaving aside the scientific aspect, which has several times already been discussed by me in these pages. At a later period I will describe my experiments in more detail.

Ordinary portrait collodion shows the greatest sensitiveness in the dark blue region of the spectrum, falsely termed the indigo-blue region; only after a very long exposure is there any sensitiveness evinced in the green, yellow and red.

In accordance with a principle which I was the first to expound, this sensitiveness for green, yellow, and red may be increased by certain bodies which absorb these particular rays. The greater number of these bodies act best on dry collodion, very few being suitable for the wet process. Eosine, however, is one of these bodies, but as in commerce there exist two kinds of eosine, it is necessary to make a distinction. The one is the yellow shade of eosine (the potassium derivative of tetrabromofluorescein,) and the other the blue shade of eosine (the potassium derivative of tetraiodofluorescein); there are besides methylated, chlorinated, and nitrated products, which I have also examined. The nature of the action of these bodies I will remark upon later, merely premising that they are now in everyday use as dyes, although seldom met with in pure state, being frequently mixed with dextrine, etc.; the impurities they contain acting prejudicially upon the silver bath.

A firm in Berlin—the Actien Gesellschaft for aniline products, whose address is: Schlesien Thor, Berlin—has been good enough to prepare some of these dyes for me in a purified form for photographic use. Both the yellow and blue eosine have been supplied to me, and I find that the latter gives rather more intensity than the former. Combined with an alkali, both of them show a magnificent fluorescence when in dilute solution; they dissolve easily in water, less easily in alcohol, and absorb very vigorously yellow-green and blue-green rays. Added to collodion in suitable proportion, they render this very sensitive to the above colored rays, and upon this depends the principle of their sensitiveness to color.

Besides these bodies, one termed cyanosine, which I have to thank Dr. Martius for, I have found exceedingly good as a sensitizer for yellow. This resembles eosine in so far that its absorption bands lie more toward the red of the spectrum, and for this reason not only produces a sensitiveness for green (as does eosine), but also sensitiveness for orange rays. Unfortunately, this substance cannot yet be obtained in a pure state in commerce. The Actien Gesellschaft, the firm I previously mentioned, only furnishes at present for photographic purposes the yellow shade of eosine, which is twice recrystallized; and this I would recommend in the meantime to all who desire to make experiments with color-collodion. Very shortly the same firm will produce for photographic purposes also, erythrosine and pyrosine, and these will then be preferable to eosine.

If these coloring matters are tried with gelatine and collodion dry plates, it will soon be found that the former is at most only double as sensitive for the yellow of the spectrum as for the blue. Practically, this would be of little advantage, for the yellow in coloring matters is so dark in comparison with the yellow of the spectrum; as I have already shown, the sensitiveness for yellow must be, not twice, but twenty-five times more than the sensitiveness for blue, if, in the resulting photograph, the yellow is to appear more brilliant than the blue. Fortunately, more favorable results are obtained with collodion plates than with gelatine. Already, my first experiment showed me that it was possible to produce plates from eight to ten times as sensitive for yellow as for blue, and for this reason I naturally turned at once to the collodion process to reproduce colors in their true intensity.

My experiments with gelatine plates I will describe later.

The action of the coloring matters depends, however, as I have previously said, very much upon the composition of the collodion. If you take ordinary iodized collodion, and add to it about 5 per cent of a solution of eosine or cyanocine (the solution containing one part by weight of eosine or cyanocine) it will be found under ordinary circumstances that there is but a slight increase of sensitiveness for yellow. For this reason I made my experiment with iodized collodion containing various proportions of bromine, and these showed me that the sensitiveness for yellow increased with the proportion of the bromide salt added to the collodion. Obviously, therefore, success lay in the employment of a bromized collodion. At the same time, I found that a small proportion of iodine was an advantage for general sensitiveness. When the silver bath from long use contains much iodide of silver, then a sufficient quantity of iodide of silver is deposited upon the plates, so that pure bromized collodion may be employed. In the case of a freshly-prepared silver bath, however, containing a minimum of iodide of silver, it is well to add 5 per cent of pure iodized collodion to your bromized material.

As a general rule, it may be said that the sensitiveness of bromized collodion plates containing eosine, and prepared in a fully iodized bath, is only one-third as sensitive for white light as ordinary portrait collodion.

WORKING DETAILS.

No. 1. *Color Solution*—At present only two coloring matters can be recommended as obtainable in commerce, the yellow shade of eosine, and the blue shade of eosine. Half-a-gramme of the material is dissolved in 160 cubic centimeters of alcohol of 95°; considerable agitation is necessary to effect the solution. The undissolved residue is not used, but the clear solution must be decanted off.

No. 2. *Collodion.*—Two grammes of bromide of cadmium are dissolved in 30 cubic centimeters of alcohol; this is filtered, and one volume of the filtrate is mixed with three volumes of neutral normal collodion made with 2 per cent of pyroxyline. For some purposes a denser film is more advantageous. This is obtained by dissolving 2½ grammes of bromide of cadmium in 30 cubic centimeters of alcohol, filtering, and mixing in the above proportion, but with 2½ per cent collodion. A collodion of this kind flows with more difficulty, and is slower to sensitize in the bath. To 95 cubic centimeters of the above collodion are added 5 cubic centimeters of the eosine, or *color solution.* The collodion keeps best in yellow bottles, and should be brought into daylight as little as possible. I may mention that an increase of eosine brings about no increase of sensitiveness for yellow, while it decreases the general sensitiveness of the plate. A lesser proportion of eosine decreases the yellow sensitiveness.

Silver Bath.—This is made up of crystallized nitrate of silver, 50 grammes; water, 500 cubic centimeters; iodide of potassium solution (1:100), 13 cubic centimeters; and glacial acetic acid about 6 drops, or until there is an appreciable acid reaction. Nitric acid is not to be recommended for acidifying the bath, as it acts too strongly on the coloring matter. It must be distinctly understood that eosine is decomposed by acid, and converted into a yellow pigment, which does not increase the sensitiveness for yellow. For this reason an excess of acid is to be avoided.

By reason of the danger of introducing impurities from the coloring matters now obtained in commerce, I do not recommend the sensitizing of these collodion plates in a bath used for other purposes. I prefer the horizontal bath, as it does not require so much liquid.

Developing, Intensifying and Fixing.—The solutions in ordinary use for collodion will suffice here. The plates are treated like ordinary wet plates, and it is an advantage of the process that no strange operations are introduced. Those who can work the ordinary wet collodion process can work the color collodion process. Pyrogallic intensifiers, mercury intensifiers, uranium and lead intensifiers, may all be employed.

MANIPULATIONS.

Preparation of the Plates.—It is best to gelatinize the glass plates first of all. One gramme of gelatine is dissolved in 300 grammes of warm water, filtered, and on cooling there is added 6 centimeters of a cold prepared chrome alum solution (1:50). The glass plates are first soaked in dilute acid, washed, put in a dish of distilled water, and then twice coated in the gelatine solution.

The coating with collodion is done in the ordinary manner, but the plates must remain rather longer in the silver bath, as the formation of bromide of silver is very slow. At least five minutes' sojourn in the bath is necessary, although in a stronger solution the operation is quicker. Before work, the dipping bath should be tested with litmus paper, and acetic acid added, if necessary.

In respect to the illumination of the dark room, one need not be very anxious. I recommend an orange lamp-shade. Eosine renders the collodion but little sensitive to red; if you keep your plate in the shadow, you may even use yellow light in the dark room.

Exposure.—As before mentioned, the sensitiveness of eosine bromide plates is about one-third that of ordinary iodized collodion plates. This affords the operator sufficient data to go upon. In the reproduction of colored pictures —as, for instance, the table of colors in my Manual—the sensitiveness for yellow is not so apparent as one might suppose. Chrome yellow and ultramarine blue come out equally light. On the other hand, the action of the eosine in reproducing rose tones is very obvious. These are reproduced in their true tone value, or intensity. In other tints, such as the green, the action of the eosine is also very apparent.

If it is desired to lessen the action for the blue still more, then you have to photograph through yellow glass; only in making the choice, some care is necessary. Yellow window glass, by reason of its defective manufacture, gives rise to unsharpness, and therefore I recommend yellow patent plate; with this, pictures of faultless sharpness may be obtained. But to secure the right shade of yellow is also an important matter. If you use too dark a yellow, the exposure is very long, while too light a yellow does not act upon the blue sufficiently. My plan is to test the glass with the spectroscope; but to those not accustomed to spectrum work, I recommend the testing photographically.

I do not mean to say that every picture should be taken through yellow glass. After some experience the photographer soon learns which medium is the more suitable. At the worst, a few experiments will settle the matter. It must be mentioned however that the yellow patent plate prolongs the exposure (often three-fold), as the best glass of this character absorbs not only blue, but also a portion of the yellow light.

I am in the habit of employing an aplanatic lens with color collodion, which, with a full opening, gives me a sufficiently sharp and detailed picture. In the case of long exposures, a dark slide may be employed with advantage, which allows a second plate to go in front of the prepared one, and thus prevents the drying of the latter; this forward plate might be a yellow one.

The Second Silver Bath—The plates, like those in the ordinary wet process, could be forthwith developed, if the bath was free from so-called organic defects; but, unfortunately, these are apt to arise by reason of impurities in the coloring matter which have been introduced into the bath. Plates sometimes show fog, and sometimes show a cloudy unequal deposit, running in streaks from margin to center. The latter are worse than the former; they may be avoided or at any rate diminished, by moving the plate vigorously in the bath. If, however, the bath is very strongly afflicted with organic matter, the only means of avoiding the action of these impurities is to employ a second bath, which may be termed the developing bath The plate is dipped into this bath after the exposure, but before development. It is made up of:

Nitrate of silver.......	50 grammes.
Water.........	500 "
Nitric acid, sp. g. 1.22	4 to 6 drops.

The plate is moved vigorously to and fro in this for two minutes, and thus the impure silver attached to it is washed off, and the eosine decomposed by the presence of the strong nitric acid. After this, development can be proceeded with without the chance of any of the above-mentioned defects. After a time the developing bath becomes impure, and then it may be used as a sensitizing bath, first being neutralized, and again acidified with acetic acid. Care must be taken to test this bath also with litmus paper before use.

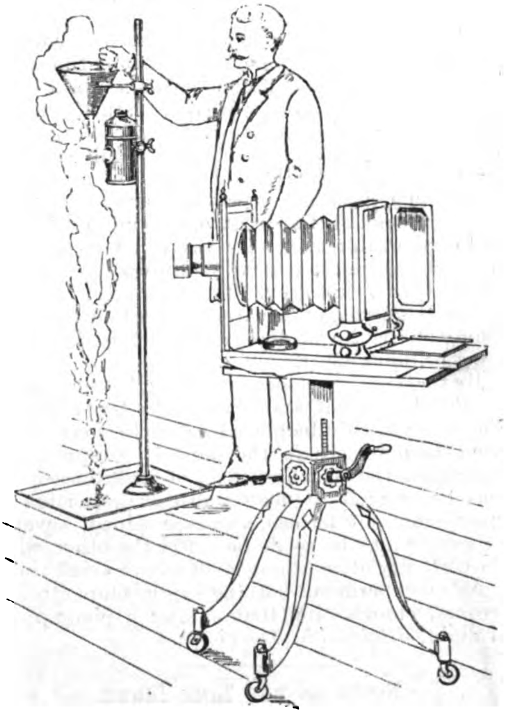
The Development.—As a rule, the plates are developed with the ordinary iron developer used in the wet process. But the same success may be obtained with an alkaline developer, and the latter has, moreover, the advantage that the organic impurities are less liable to give stains. In the case of alkaline development, only one silver bath is used. The exposed plate is first washed with distilled water, then put under the tap for five minutes, and then once more in the distilled water. It is best developed in a dish with the following solution:

Carbonate of ammonia solution	(1:6)	2 cub. cts.
Bromide of potassium "	(1:4)	½ cub. ct.
Alcoholic pyrogallic "	(1:10)	1 "
Water............................		30 cub. cts.

If the exposure has been too short, the amount of carbonate of ammonia, which must always be freshly prepared, may be augmented.—*Photographic News.*

TAKING A PHOTOGRAPH BY THE MAGNESIUM LIGHT.

Taking portraits at night by the electric light is now a matter of every day occurrence, and has many advantages, but as an experiment it is too expensive for the amateur photographer to undertake.



Our engraving illustrates a novel and easy method of photographing by the aid of the magnesium light. If a magnesium ribbon of a certain length be used, the ash will sometimes drop and suddenly extinguish the light.

This difficulty may be overcome by the use of magnesium powder mixed with fine sand. Upon a metal or wooden rod six or eight feet long is clamped an alcohol soldering lamp capable of giving a large horizontal flame, and above it a funnel of tin or brass with a short mouth about three-quarters of an inch in diameter. The lamp should be quite close to the funnel; the rod may be secured at the bottom to any suitable base of wood or metal, and may rest upon a table instead of the floor. A pan or dish set upon the base will catch any falling particles.

The proper focus may be obtained by focusing upon the flame of a candle placed where the person is to sit. The shadows are softened by reflecting the light with a white muslin screen secured to a frame which may be tilted at any angle, as shown. No cap is used on the lens.

One thimbleful of magnesium powder is mixed with two of fine sand, with a spoon or piece of wood upon a white sheet of paper.

To make the exposure the operator, after fixing the sitter in position and drawing the slide of the plate holder, simply steps up to the funnel and quickly dumps the magnesium mixture into it. The alcohol lamp sets fire to the magnesium as it, in falling, comes in contact with the flame, and a long, brilliant, dazzling sheet of light, lasting for a second or two, is the result. Such a brief exposure is generally sufficient. The duration of the flame can be regulated by the addition or subtraction of the magnesium or sand.

Should a picture be over exposed, the duration of exposure can be shortened by the addition of a little sand and a corresponding diminution of magnesium powder. If a larger amount of magnesium is used in proportion to the sand than that stated, the light will be more brilliant and of short duration. By varying the proportions of the two, it is possible to produce a flame of light from six to seven feet in length.

The large area of the light tends to diffuse the same, softens the shadows, and gives to the picture a brilliant effect.

By varying the position of the light, very artistic effects of light and shade may be produced The sitter should be placed so as to look away from the point where the light is to appear, in order that the dazzling effect of its intense glow may be avoided. Once the proper proportion of magnesium powder has been ascertained, several exposures may be made one after the other, with the certainty of obtaining good pictures each time.

As an experiment nothing can be more attractive and entertaining than taking a photograph at night.—*Scientific American.*

NOTES ON THE LIME LIGHT.

BY T. FREDERICK HARDWICH.*

In the process known as the oxyhydrogen, or mixed gases, one-twentieth of an inch has been found to be a useful size for the orifice of the burner; but, as a biunial lantern consumes a large quantity of oxygen, I have tried this year to reduce it. I find that it may be reduced to one twenty-fifth of an inch without much loss of light, but I still give the preference to the former size when economy is not an object. The actual size of the orifice, however, is not all which we have to consider; the distance inwardly before the bore begins to expand must also be taken into account.

The distance of the point of the burner from the lime, measured diagonally, should be about a quarter of an inch when the angle of incidence is 45°. When the angle of incidence of the burning gases on the lime is less than 45°, the cylinder must be brought nearer. I have one burner, bent at an angle of 17°, which works best when it almost touches the lime.

I have quite discontinued working with very heavy weights on the bags, such as one and a-half or two cwts, finding the lantern more difficult to manage without an assistant, and the danger of accident greater. Abundance of light for all ordinary purposes can be got with three-quarters to one cwt. on an eight-foot bag, if the joints are gas-tight and the taps turned on full. I take certain precautions when working away from home, which it may be useful to mention:—1. Never allow any volunteers in the audience, who think they know a little of "magic lanterns," to come forward and help you. 2. Always strap on the weights to the pressure-boards, or tie them tightly with string. 3. Place the boards at a sufficient distance from the wall so that they cannot touch it in their descent, and put a reliable person in charge of them, with strict injunctions to allow no one to come near.

On the subject of "dissolving," I may allude to the snapping noise, like that of a percussion cap, which occurs with some burners of the blow-through kind, when there are two concentric tubes, and the outer tube of hydrogen projects beyond the inner tube for the oxygen. It was suggested to me to throw a little oxygen into the by-pass flame, and this I found to answer perfectly.

I strongly advise that all dissolvers should be made with a by-pass tap to both gases.

Manufacture of Oxygen Gas.—I have a word to say on the use of chlorate of potash for preparing the oxygen. After experimenting with different samples, I am inclined to think that the kind that breaks with a conchoidal fracture, and is very hard to pulverize, is the most suitable.

Broughton's Ethoxo Lime Light.—When coal gas is not available, I still continue to use the ether process invented by Mr. Broughton, of Manchester.

In Broughton's tank the ether is not vaporized by heat, but a small quantity of oxygen is passed through it. This constitutes a source of danger, because an explosive mixture might be formed if the disengagement of ether vapor were not sufficiently copious. The oxygen should be saturated, or nearly so, after which the mixture will burn like common gas.

When you have purchased a tank, fill it with the lightest methylated ether of .720 sp. gr., and light the flame at the jet of the lantern. If it burn yellow and luminous, like the flame of a candle, the proportion of ether will be sufficient to give you safety.

To study the color of the flame effectually, it is not enough to turn on the tap gently and to allow it to burn against the face of the lime. The lime must be taken out of the way. Close the O tap of the jet entirely, and put on a strong pressure from the H tap of the jet until the flame shoots out, like a blow-pipe flame, to a length of six inches. You will then notice one of three different stages indicating less and less ether, before the last or explosive stage is reached.

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* Abstract of a paper read before the Edinburgh Photographic Society.

1 In the first stage, when the ether is plentiful. the flame is yellowish, with an outer envelope of blue most marked at the base and point, the blueness being due to oxidation by the surrounding air. This flame, when allowed gently to play upon the lime cylinder, does not heat it red hot, except at the edge of the flame, but sometimes deposits carbon upon it.

2. With a smaller quantity of ether in proportion to the oxygen, the interior yellow flame dwindles away, and the outer envelope of pale blue becomes more and more pronounced, until the flame is blue throughout, with an edging of violet next to the air. This flame will heat the lime to bright redness, but it will not make it glow. By turning off the tap suddenly you find that it is not explosive.

3. In the third stage the outer envelope of violet has encroached upon the blue, just as the blue before did upon the yellow, and the whole flame is of a fine violet tint, fringed with a dull red or purple. It will now heat the lime to whiteness and make it shine, but not with the full degree of incandescence. It cannot be termed very explosive, because if you turn off the tap it goes out quietly. I am not prepared to say, however, that it could not be sucked back or forced back into the mixing chamber.

4. In this last stage the flame is still a shade of violet; but the cone of imperfect combustion at its base, which you can easily see projecting from the point of the jet, is very much smaller in size. Instead of being three-quarters or one inch long, as it was before, it has diminished to a quarter or one-eighth of an inch, and if you find this you may be sure that there is danger.

Back-pressure valves—whether metal or silk—are useless for stopping flame.

My advice to persons holding crowded exhibitions is to procure two pumice chambers, to have them properly tested, and to place them—one upon the H nozzle, and the other upon the O nozzle of the tank at the end nearest the lantern. In addition to this, a back-pressure valve may be put on the O nozzle of the tank at the end furthest from the lantern, to prevent suction if a weight were to fall off the bag. In attaching the tubes, be careful to use only the thickest and best india-rubber.

Two questions have still to be answered:—Can the ether be used over and over again by simply making it up to its original bulk with fresh ether of .720? To test this point I took five fluid ounces of ether which I had put away in a bottle as having been too often used to be reliable, and, after filling it up to eight ounces with ether of .720, I poured it into a tank make to hold fifteen ounces. On passing the oxygen the flame burnt yellow, but slightly inclining toward blue. In half-an-hour it burnt pale blue, and in another half-hour violet. Then, in another quarter-of-an-hour, the gurgling noise in the tank became irregular, indicating that the ether was evaporating down almost to dryness, and that the last of the septa had been reached. On turning off the tap the flame went out quietly without explosion, and the tank when weighed was found to contain exactly three fluid ounces of ether. This experiment speaks for itself.

The Oxygen Bag as a Source of Danger.—This bag has been known to take fire more than once, even in the blow-through or safety process, and the cause is supposed to be an accumulation in it of a dusty or powdery substance produced by the disintegrating action of chlorine present in the oxygen as an impurity. I would suggest that a back-pressure valve should be placed on the nozzle of the bag when such a substance is known to be present. The only precaution which I take is to thoroughly purify the oxygen. Pass it through two washing-bottles, the long delivery tube of the second being closed at the end, and then perforated with a number of small holes, like what is called a "rose burner." Fill each bottle three-quarters full of solution of common washing soda in the proportion of a quarter of a pound to the pint of water, and the oxygen will then be nearly or quite free from smell. No water will enter the bag if four or five feet of india-rubber tubing of half an inch internal diameter be used to connect it with the nozzle of the second purifier

After I had finished my "notes" and made them almost ready for the printer, I saw a report of the disastrous explosion at the Chadderton Town Hall, and of the evidence given by Professor Roscoe. He entirely condemns the use of the ethoxo light. If he had tried it, I think he would have come to a different conclusion.

The cause of the Chadderton accident was undoubtedly the forcing of a little ether backwards into the oxygen bag from absence of a reserve chamber, which ought to have been provided.

In the discussion which followed the reading of this paper, Mr. J. M. Turnbull said that with one or two exceptions he agreed entirely with everything that Mr. Hardwich had said in his paper. He thought that the proper angle for the burning gases to strike the lime cylinder should be the greatest that could be given, without giving a shadow on the screen, *i. e.*, as near a right angle as possible. He agreed with Mr. Hardwich that "light for all ordinary purposes could be got with ¾ to 1 cwt. on each bag"; but where the very best light is wanted to fill a 20 ft. screen, he believed in having plenty of pressure. Square weights ought always to be used, or still better, a long flat-sided weight cast for the purpose, in shape like a piece of pig metal. With regard to the ether generator. he had used it many times with convenience to himself, and believed it was quite capable of giving a light equal to the mixed gases. He thought it quite safe in competent hands, but it should not be trusted in the hands of those who were beginners, or who had only a slight knowledge of what they were doing. In making experiments with the generator packed in ice, Mr. Hardwich did not seem to be aware that all properly made ether generators are jacketed or encased in a thick coating of some non-conductor of heat, such as cork raspings or sawdust, and consequently not easily affected by cold or by a little heat such as that of a crowded room. With regard to the Chadderton accident, he quite agreed with the opinions of Mr. Hardwich, Mr. Wright, and the published opinion of Mr. Broughton, that the cause of the explosion was that there was ether in the bag. He thought Mr. Wright's suggestion to open the hydrogen tap of the generator first to relieve any pressure a most valuable one. He did not think Mr. Wright's first objection to ether, viz., want of saturation, a serious one, as he had proved to his own satisfaction that either air or oxygen could be very easily saturated with ether to make them burn freely; but the second objection (that of back-pressure) was one that would require to be seriously met and remedied either by the construction of a generator that could be blown back without sending the ether back through the tubes, or by interposing some thoroughly tried safety contrivance. He had very little faith in back pressure valves, &c., and the newly-suggested pumice chambers would require to be thoroughly tested before they could be said to be safe.

Mr. Hume said, with regard to the preparation of the oxygen, he did not find it necessary to weigh the ingredients; but when making the gas himself, he simply blackened the chlorate with the manganese dioxide. When once the flow of gas begins, the heat should be kept low, for a kind of fusee action goes on in the mixture till all the oxygen comes off regularly if a moderate heat is kept up below the retort. It is of the greatest importance that the tube leading from the retort be ranged out with a stout spiral wire each time the gas is made, for so much solid matter is carried over that it would ultimately choke the pipe if neglected after several makings, and to this cause he attributed some of the accidents that had happened. For those who suspect black materials like manganese dioxide, and do not feel sure of the tests for it, he mentioned that red oxide of iron would suit quite as well; indeed, it was much preferred in some chemical laboratories, as giving the gas more free from chlorous compounds. Common sea-sand would also help to give a steady flow of oxygen when mixed with the potass chlorate. He had used the mixing burner he exhibited very frequently for the past five or six years with oxygen and coal-gas in separate bags under one hundredweight pressure each, without any approach to a casualty; indeed, he considered it the safest arrangement that could be used. The mixing chamber in this burner has no packing whatever. It is not desirable or safe that the weights should fall off the bags; but the last time he gave an exhibition in this room, one of the weights fell off the oxygen bag without anything going wrong except the diminution of light, and all went right when his assistant replaced the weight. On former occasions, too, while the light was burning, he had lifted weights off and put them on again without any accident or even a snap.

Mr. G. A. Wilson said, with reference to the pumice safety-chamber, his objection to it was that, after being repeatedly used or knocked about, some of it was apt to get pulverized and blown into the nozzle of the burner, and so choke it up. The only safety-chamber he used was a common piece of cane inserted in the tubing near the burner. Through this no light will pass, no matter what the composition of gases may be, and no dust will pass from it into the burner. The diameter and length will depend upon the pressure available or necessary. He had found, with 1 cwt. on the bags, a piece of cane ½ inch in diameter and one inch or 1½ inch long, thoroughly efficient. If a piece of cane such as he described were attached to each burner, he had not found it possible that an accident could occur, no matter what suction takes place by the weights falling off, or in whatsoever proportion the gases are mixed, because they will not explode without a light, and the light is stopped at the cane. With reference to the ethoxo lime light, he considered it safe so long as kept burning sufficiently to make the lime incandescent; but the moment it is turned down with the tap for the purpose of dissolving with a double lantern, it becomes dangerous. He thought the danger due to the dissolving tap being at a considerable distance from the ether generator, and the intervening tube became filled with oxygen gas saturated with either, and as the little escaping, or rather burning, at the nozzle is not issuing at high pressure, the flame rushes back as soon as the dissolving tap is turned on. Some lanternists held that it was not possible for the flame to travel along tubing; but he maintained that such was not only possible, but certain when using the mixed burner if the weights should fall off the hydrogen bag, causing a suction of oxygen gas into hydrogen bag. It was an undoubted fact that bags sometimes catch fire when the weights fall off, and this he believed might account for it. With reference to the lantern microscope, he had also been giving his attention to it, and had succeeded in showing a flea (the object, not the disc), six to twelve feet in size, clear and distinct on the screen, by using a specially constructed lens of wide aperture and high power.

Correspondence.

PHOTOGRAPHS IN IMITATION OF POSTAL STAMPS

EDITOR PHOTOGRAPHY—*Dear Sir:*—I perceive that a firm in St. Louis are pushing the above and claiming them as something new, and to have applied for a patent. These may be new to new beginners in photography, but in 1859 I got up an arrangement by which I made 54 similar sized photographs on a 7x9 plate, at one sitting gummed the backs of the sheets, and sold thousands of them at the Lincoln and Douglass canvass in 1859. I made and sold one hundred and twenty thousand stamp-size in one order, printing twenty-four thousand in a day.

A. HESLER.

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EDITOR PHOTOGRAPHY:

Dear Sir—I notice in your May15th number "Substitutes for Ground Glass.

The best substitute I have found for an emergency, or in fact for constant use, while clean, is to take a piece o' "white lead putty", equal parts white lead and conmon putty,—that can be had in almost any town—work them together until quite soft, make into a ball and roll over the surface of clean glass and you have a ground glass just as fine as you choose to make it, and that will answer all purposes.

VETERAN.

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CINCINNATI, May 20, 1884.

EDITOR PHOTOGRAPHY:

Dear Sir:—You wrote me some time ago about matters pertaining to the interests of the convention, and wanted to know if I would furnish you with a copy of the proceedings of the executive committee. I did so and was glad to accommodate you, and intended to write to you again about different places in the city of interest to the fraternity. But I saw a notice in your last issue in regard to the meeting of the execu ive committee—that the secretary suppressed matters of the most importance, and that we had a hot time of it. You say you were informed by a reliable party who knew all about the workings of the committee. All I have to say is, that the party who gave you the information knew that he was telling an untruth when he made that remark. As far as I know everything passed off pleasantly and everybody was satisfied with the meeting, and I think I ought to know. There are people in this world who do not know when to mind their own business and I suppose he is one of them. I sent you the same copy as I sent the others and I still have the original copy of the meeting, and if anybody wan s to see it they can do so with pleasure. You can deny this matter under my signature if you choose to do so. I would not nave noticed it but wanted these parties to know that they have the wrong party to deal with, as my transactions are always above board. I will wait for an answer before I write to you again. Hoping the convention will be a success, as we are doing everything to make it so, I remain,

Yours fraternally.

LEO WEINGARTNER, Sec. P. A. of A.

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CLEVELAND, O., May 23d, 1884.

ED. PHOTOGRAPHY:

Dear Sir:—As in your issue of the 15th inst. you give prominence to "hearsay," and indulge freely in comment on the strength of such uncertain material, I feel called upon, as a member of the Executive Committee, to reply.

You tell us there is grumbling among those who contributed liberally toward the expenses of the last convention P. A. of A., because no proper statement of expenditures was made, and that a prominent house will not contribute one cent for the expenses of the future until such statement is forthcoming, and this stubborn stand is taken in the face of our invitation to "Pony up."

Since this house, which clamors for a report, did not contribute one dollar to the fund last year, its resolution is amusing.

As every manufacturer of photographic requisites, and every dealer in photographic goods is supported in his business by the working photographer; as the yearly conventions and exhibitions are quite as much in the stock dealer's interest as in the photographer's; as the P. A. of A is a ship of the stock dealer's launching and lading; a ship whose "coming in" means profit to him; I believe it very proper that he help pay the expense of sailing.

As an individual, I will not undertake to make a report—which belongs to the committee to do,—but I will promise the grumblers that the *rottenness in Denmark* may come to the front at the next convention, when a report can show who the contributors were, and, if necessary, who failed in that important matter. If it be shown that the executive committee have feasted on sweetcake at the stock dealers' expense, they must be *frowned down*. In the meantime contributions are in order. W. A. Armstrong, treasurer, Milwaukee, will be glad to receive contributions from parties entitled to make them, and dues from members It costs money to run conventions, and the treasury is not bursting.

Respectfully,

J. F. RYDER.

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ROCHESTER, N. Y., MAY 24, 1884.

EDITOR PHOTOGRAPHY:

Dear Sir:—My attention has just been called to the article on the first page of your journal for May 15th in regard to affairs of the P. A. of A., and it occurred to me that it might have been better if the criticism therein had been made to the executive committee, and not given to the public.

The association to be successful at the coming convention should have no obstacles thrown in its way.

Leaving out of question entirely the justice or injustice of the strictures, it does seem to me that the publishers of photographic journals should be interested in aiding, rather than injuring, the chances of success of the society.

It is true that no report of expenditures has been given by Treasurer Reid, and that fact might, of course, to some have a suspicious look, but as you are aware, the present officers of he society are not those of last year, and are not wholly responsible for the acts of their predecessors. If it is desirable that the association should be continued and built up it will not be done by throwing cold water on the acts of last year's officers.

In regard to the second matter spoken of in your article, I must say I was considerably disappointed in the appearance of the secretary's report. It was not as complete as I supposed it would be, and I was particularly distressed at the prominence given the president in that article. I left the matter in the hands of the secretary and trusted it would be complete.

However, I may say there was nothing suppressed that was intended to be covered up, and so far as I am aware there was nothing in "Denmark" that was not in an excellent state of preservation.

Very truly yours,

J. H. Kent.

Meetings of Societies.

STATE MICROSCOPICAL SOCIETY OF ILLINOIS.

A regular meeting of the State Microscopical Society was held at the Academy of Sciences on Friday evening May 9th, Pres. Prof. E. S. Bastin in the chair. The minutes of the previous meeting were read and approved, and the receipt of the *Journal of the Royal Microscopical Society* and *the Bulletin of the Belgian Microscopical Society* announced. Dr. Detmers as chairman of the committee on publication could only report progress. Mr. Fellows moved that the committee have further time.—Carried. Moved that when the meeting adjourns we adjourn until the 2d Friday in June.—Carried. A committee of three was appointed consisting of Prof. Hill, Mr. Summers, and Mr. Boring, to have 500 copies of the constitution and by-laws printed.—Carried. Prof. E. S. Bastin then read a very interesting account of some microscopical expert work in connection with a recent murder case. He said that last September a man named Thorpe was found, evidently murdered, in an ice-house at Paxton, Ill., and circumstances pointed to one James Ryan as the murderer. The evidence, though strong, was hardly enough to convict. The floor of the old ice-house was covered with sawdust, and the streets were very muddy. Upon examining Ryan's boots and the bottoms of his pant legs, mixed with the mud were found particles of sawdust, which were conclusively proven, by the aid of the microscope, to be hardwood sawdust. The defense claimed the sawdust found on the shoes came from another ice-house, but it was proven upon examination, that the sawdust from this ice-house was of an entirely different character from that found on the shoes and pants.

Dr. Detmers moved that a question-box be provided, into which members might put questions which they would like answered, and that they should be read by the secretary at the close of the meeting. After some discussion the motion was carried. The following questions were put into the box, and assigned Mr. W. H. Bullock to answer: 1. What constitutes ten inches length of tube? 2. Where is the conjugate focus of the objective? And where is the conjugate focus of the eye-piece? 3. By what means can the conjugate focus of the objective be found and placed? 4. In measuring the spaces of an eye-piece micrometer by means of Wollaston's camera lucida what ought to be the distance between the center of the eye-lens and the paper? 5. Should the just mentioned distance be under all circumstances ten inches? Or should it be equal to the length of tube if measurements are taken to determine the magnifying power of the microscope, that is, of the combination of eye-piece and objective?

Adjourned. W. Hoskins, Sec.

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CHICAGO AMATEUR PHOTOGRAPHERS' CLUB.

The regular May meeting was superseded by a lantern exhibition at Grand Army hall, 167-169 Washington street, on Wednesday evening May 21st.

Dr. Garrison furnished and operated the lantern, the slides being contributed by a number of the members, but the majority by the president and Mr. Burnham. Quite a number, however (mostly foreign views), were furnished by Mr. Irwin, and a few each by Dr. Mercer, Mr. S. W. Fallis, Mr. E. B. Harwick, and several others. A contribution of 18 slides was received from the Photographic Society of Philadelphia, made on Carbutt's "A" plates, and nearly all of them from negatives on the same maker's "special" plates. They were all fine, some of them especially so, and most of the subjects were very beautiful. These slides were made by Robert S. Redfield, S. Fisher Corlies, and John C. Brown. A group of ferns and toad-stools, by the latter, elicited universal admiration, while "Bits of Color," by Mr. Redfield was received with roars of applause. Although, as we said before, these Philadelphia slides (for the loan of which the club tenders its grateful acknowledgements) were very fine, we do not think that in technical excellence they surpassed the average of Messrs. Garrison & Burnham's work, while a few of the best of the latter were considered to slightly excel them. Our Philadelphia friends, however, had the advantage of the other gentlemen in choice of subjects. Nearly all of Mr. Burnham's slides, and we believe all of Dr. Garrison's, were made on the latter gentleman's plates and most of the negatives also, a few of Mr. Burnham's slides and rather more of his negatives being on Rockford plates, while two or three, both negatives and positives, were made on the "new" Beebe plates, and these compared very favorably with any others exhibited. Mr. Irwin's positives were mostly on the "old" Beebe plates, Mr. Fallis' on Carbutt's "A."

Every slide shown was dry plate work, as the circular calling the meeting excluded wet collodion. Most of those present were of the opinion that the "dry work" exhibited would compare very favorably with average collodion work, while a few specimens it would be hard to beat by the wet process even in skilled hands. Altogether about 200 slides were put through and very little time was wasted in "talkee-talkee." The attendance was large, including many ladies, invitations having been sent out to a great many not members of the club. Unfortunately, owing to the failure of some parties to "get around" in time, and to the fact that Mr. Bent had omitted to send a key with the gas cylinders, necessitating sending out to hunt a monkey-wrench, it was nearly 9 o'clock before the exhibition got started, but after that every thing went smoothly, and those present spent a very enjoyable evening.

The slides exhibited covered a wide range of subjects, landscape, marine, portraits, statuary, paintings, engravings, microscopic, etc.

THE ROCHE TESTIMONIAL.

On the evening of March 18th, a testimonial dinner was given to the veteran photographer, Mr. T. C Roche, by his fellow craftsmen of New York and vicinity, in recognition of his long and valued services to photography and of his sterling qualities as a man. So many good things were said at this entertainment that to print them all would fill far more space than we can possibly devote to it; but we cannot refrain from reproducing the following extracts from our genial contemporary, *Anthony's Bulletin*, and beg to refer our readers to that journal for an extended account of the whole affair:

In the absence of Mr. H. J. Newton, the Chair was taken by Col. Wilcox.

THE PRESENTATION.

Mr. Bogardus was greeted with applause, and in making the presentation spoke as follows:

My Brother: I wish to say a few words to you. We feel it a duty as men engaged in the profession in which we are, to yield honor to a man who has done so much for us; and a few of your friends have gathered here to-night to offer you this testimonial. I say a few, because if all your friends were to come together, I don't know where you would find a room to hold them, and I don't know a caterer who would undertake to feed them. Your friends are many. You have worked with head and hand, and you have such indomitable pluck that you never stop short of success; and we only say amongst ourselves, "What will Roche do next?" It is said of Lincoln that when Sherman commenced his march the people at the North didn't know exactly where he was going, and some one asked Mr. Lincoln if he knew. Mr. Lincoln said: "I know where he has gone in, but it is hard to tell where he will come out." It is so with Mr Roche. He is working at something constantly, and we don't know where he is going to come out; but whenever he comes out he brings something with him. All we have to say is, Friend, go right along, and we will stand at your back.

It is related by naturalists that a certain little amphibious animal is all nerve from the top of its head to the end of its toes. Mr. Roche is all photography from head to toes.

MR. ROCHE'S RESPONSE.

Mr. Chairman and Gentlemen:

I consider this a great honor which you are conferring on me for my humble endeavors to promote photography, and as a workman in the profession. In accepting this magnificent testimonial of your esteem, gentlemen, I more than thank you, one and all. You time me by your friendship, and chain me by your good will.

A great deal of my success is due to the Messrs. Anthony & Co., and in particular to Mr. Henry T. Anthony, who has pointed out the lines of investigation to be pursued and objects to be gained, and by his chemical skill has enabled me to overcome every obstacle I have met with in attaining the results desired. Their uniform kindness, courtesy and confidence has always made the discharge of my duties a source of unalloyed pleasure.

In my intercourse with professional and amateur photographers I have always found great satisfaction, and I have reason to believe that the feeling has been mutual.

To the gentleman, who, unknown to me, originated this evening's demonstration, Mr. Henry N. Grenier, and to those who so promptly united with him, I am under deep obligations.

There are here to night some gentlemen who are world-renowned in the profession, and they do me honor by joining with you on this occasion. You are anxious to hear from them, and I am afraid unless I stop I may over-develop and fog badly.

I thank you all again, gentlemen, for your substantial mark of esteem and friendship.

THE CHAIRMAN: There is a toast on the list to be responded to by Mr. George G. Rockwood. You all know him. He does everything as "quick as a wink."

PHOTOGRAPHY OF THE PAST AND PRESENT.

MR. ROCKWOOD. That is a hint from the Colonel that he wants me to be brief.

Some three weeks ago, some one came to me and said, "Rock, we are going to give the old man Roche a setting up. Now I want you to speak on the toast, Photography of the past and present." I said, "That is rather presumptive; is it not?" "Yes," said he; "but, Lord, you have been a photographer always" If he had limited it and said I had once been a photographer; but he has carried me way back to the age Methuselah, and I don't think it is proper for me to respond. Mr. Bogardus is the man; he has been some ninety-nine years before the camera. (Laughter.)

Last Tuesday night I went to the meeting of the photographers at the American Institute. Brother Whitney stood up and claimed he had taken a good picture of Pontius Pilate. Charlie Hull said, "Rock, that ain't so. He is nothing but a boy in the business. I tell you I used to take instantaneous photographs off

Noah's ark." So you see, I am entirely unfitted to speak on that subject in that way.

The Chairman. Gentlemen: Here is the testimonial, and on the inner case you'll find engraved—

Presented to
Thomas C. Roche
by
Brother Photographers
as a mark of esteem and for valued
services to the craft.
March 18, 1884.

I will send it down the table so that you all may see it.

The Chairman. Gentlemen: There is a Gardner here to-night, although it is not exactly the season for gardening; so we will call upon him to respond to the toast—

"THE HISTORY OF PHOTOGRAPHY."

Gentlemen, I take pleasure in introducing to you Mr. J. B. Gardner.

Mr. J. B. Gardner: *Mr. Chairman and Gentlemen:* The history of photography—in five minutes!! (for this is the time given, I believe, to each of the speakers). With such a *long lease of time*, it is of course essential for me to go back to the first of our forefathers, even unto Adam.

No doubt you have all experienced the disagreeable fact that those whose images you have taken have seldom been entirely pleased with their own shadows; there was always something either in dress or expression that was not altogether satisfactory. Now, if we analyze this matter carefully, we shall find that they are not so much to blame as at first sight they might appear to be, from the fact that this spirit of fault-finding comes from inheritance! For it is recorded that when Adam first saw his image he was so displeased with himself that he went out and commenced ornamenting his person with fig leaves! And all his posterity, up to the present hour, have continued the practice of ornamentation to cover their defects.

You are all, no doubt, familiar with the difficulties the Egyptians passed through in their image-making and image-worship, and how they manifested the same disposition as Father Adam, worshiping every other image but their own.

Now, there is something also of the history of photography or image-making that has not been written—some little things that are of value, but of which we know nothing except through the medium of tradition. Take for example the "magic buff." We should, no doubt, search history in vain to find the origin of this discovery, and hence we have nothing left us but tradition to satisfy our curiosity.

The story is, concerning this "magic buff," that its first inception came from an accident. It is said that a daguerreotypist who was very fond of playing the violin and was too poor to have a home separate from his gallery, devoted his leisure time in thus amusing himself, wife and child. Well, the boy naturally had the disposition of the father, and desired to do just what the father did. Of course he was not allowed to have the instrument, so in the absence of the father he substituted a buff for the violin, and a tallow candle for the bow, and thus accompanied himself with his own resonant voice; but he had not proceeded far in his song when the mother appeared and instantly changed the tenor of his music. She had scarcely removed the bulk of the tallow from the buff when the husband came in, followed by a customer. The buff was used, the plate exposed, and the picture was found to be entirely overdone. He took the same buff again and prepared another plate, and exposed it in the camera for one-half the time only of the previous sitting. This picture also proved too light; but his patron taking no exception to it he allowed it to pass. The wife was too much frightened to allow her husband to know the truth regarding the buff, but when the family physician came in she privately told him all the particulars regarding the matter. It is a sad day for the husband when the wife tells her doctor family secrets that she dare not reveal to the head of the household! The doctor, being no novice in the daguerrean art, discovering the advantages of a greased buff, called it for the first time "the magic buff," and sold it to each of the daguerreotypists for twenty dollars a piece, not even excluding the originator himself.

THE MAN AND HIS WORK.

Mr. Roche commenced as an amateur photographer in 1858. In 1860 he first brought into use aniline dyes for photographic purposes, for tinting albumen paper and varnishes for ambrotyes, and for coloring photographic prints.

In the spring of 1862 he was induced by Mr. H. T. Anthony to adopt photography as a profession, and has remained in his employ ever since. About the same time there was an immense demand for first class stereoscopic work. There were already several very successful photographers in the field, and he doubted his ability to cope with them; but through the encouragement of Mr. H. T. Anthony he regained confidence and was soon recognized as an expert. He was the first to take a complete set of stereo-negatives of Central Park, for which he was then complimented in the *New York Herald* by Mr. James Gordon Bennett. He was also the first to make a series of Greenwood Cemetery.

During the war arrangements were made by Messrs. Anthony with the government, by which Mr. Roche left for the front and was placed under the special orders of General Meigs. He then secured several hundreds of 10x12 negatives for government use, and at the same time thousands of stereoscopic views of war scenes, etc., for the Messrs. Anthony.

Afterward he traveled east, south and west in search of the picturesque. During this interval he made upward of fifteen thousand negatives, meeting with great success.

His experience and mode of working in the field he gave to the fraternity at the Photographic Convention of the N. P. A., held in Buffalo, for which he was honored with a special vote of thanks.

In 1877 he was awarded a silver medal for the best carbon transparencies, and again in 1878. In the same year he invented a new mode of photo-mechanical printing, and although seventeen patents were previously issued, he obtained two. This process is now in general commercial use by the Messrs. Anthony, and Osgood & Co., of Boston, and others.

In 1879 he was the first to make and show proofs on gelatino-bromide paper, for which he also obtained a patent.

In 1880 he announced the important discovery described by Mr. J. Traill Taylor as the "missing link," for making an insoluble, non-frilling sensitive gelatine dry-plate, requiring neither ice nor alum in its development in the hottest weather. These are now commercially known as the Eastman Tropical dry plates; and he is at present engaged in perfecting other improvements that will still further advance the art.

In his relations with professionals and amateurs he has gratuitously imparted all the information that lay in his power.

He loves his profession, and although he has seen hard service in the field, he has never regretted having chosen photography as a business. He considers that much of his success is due to the encouragement and support he has always received from the Messrs. Anthony & Co., particularly Mr. H. T. Anthony, to whom he feels under great obligations. The latter gentleman, from his more extensive knowledge of photographic chemistry — having long made that a special study — has often been enabled to impart important information on the subject of chemical action and re action; and when Mr. Roche has been tempted to give up in despair, not finding the results he sought, a timely suggestion from Mr. H. T. Anthony has solved every difficulty.

The Chairman. We have a distinguished gentleman here, who may not be known to you all, Prof. Dudley. He has kindly consented to respond to the toast—

MICROSCOPIC PHOTOGRAPHY.

Mr. President and Gentlemen:

I feel honored in being requested to reply to the toast — "*Microscopic Photography,*" for there are others who from years of labor, when the difficulties were far greater than at present, could speak from experience of the obstacles overcome, which occur in the development of any art. The knowledge which the earlier laborers in this branch have made known now enable us, with our present facilities, to enlarge and extend the scope of this instructive and highly important branch.

One of the earliest workers in this direction was the late Dr. John William Draper, whose memory is doubly dear to every photographer, for it is now conceded that he was the first to apply the daguerreotype process in taking portraits, his sister, now living, her face sprinkled with flour, sitting *thirty minutes* in full sunlight to obtain the result. His experiments with bromide of silver in photographing the spectrum were made in 1834 to 1837, long preceding the discoveries of Talbot and Daguerre. His photo-micrographs, made on daguerreotype plates long before the era of collodion, are simply wonderful, and taken with a microscope which the merest tyro would now consider unsuitable for his use. We have not been able to improve upon his blue cell in simplicity or effectiveness, to render the sunlight monochromatic, for this branch of photography.

The medical profession have up to the present time made the most extensive use of photo-micrographs in prosecuting and recording their researches upon the causes of human suffering, the means of alleviation, and further prevention. They have long recognized its value for quickly recording what they see in the microscope with a fidelity and exactness otherwise impossible, which at the same time can be reproduced in unlimited quantities, and disseminated, increasing the benefits of the worthy laborer many fold.

It is in this way that differences of views may be reconciled, facts separated from opinions, and the truth finally gained.

The years of labor devoted by a few men to the discovery of the micro-organisms, which are supposed to produce certain diseases or epidemics, recording the results by photo-micrographs, will render their names immortal.

Thanks to you, able photographers, who have rendered such results possible; also to those who have devoted so many years to render practical the sensitive dry plate, which gives us the means of doing much by ordinary lamp light that was only possible a short time since by electric light or the sun.

Our opticians have not been idle, and now with a good 1-10 or 1-12 inch wide angle homogeneous immersion objective and simple 8x10 camera we can amplify many subjects to 1,000 diameters, covering an 8x10 plate, and obtain good results by these means that a few weeks since were unknown.

There is much discussion as to the utility of the eye-piece. When it is good, a large range of work can be done with it in a camera so compact that the object may be adjusted, focussed, and the operator can look on the ground glass at the same time.

Improvements in the eye-piece will extend the scope of the simple camera. The use of a supplemental eye-piece to directly view the image for focussing, instead of on the ground glass, when great amplification is required, is a step in advance of preceding methods.

There has been much discussion as to the possibility of making accurate micrometrical measurements, to reproduce delicate, even lines upon the gelatine plates. Thanks to the one we honor to-night, we have a film so firm that we can obtain accurate measurements and even lines. For such work the developer is very important. The soda developer, so far, gives me the best results.

In science, the arts and manufactures, photo-micrographs are fast being recognized as a means of research and record indispensable to the highest degree of success, and the Boston Institute of Technology is preparing to give instruction in its applications as one of its branches of study.

The photo-micrograph is one of the universal languages of the scientific world.

DEATH OF THE REV. F. F. STATHAM.

On Tuesday morning, April 22d, at about half-past seven, the venerable president of the South London Photographic Society breathed his last. As president of the South London Society, he has, by his universally kind and genial manner, won the affection of all, and numerous as have been the changes in the staff of this society, we believe that during the twenty-five years of its existence, no proposal has ever been made to place any other person in the presidential chair. It was intended, as we have already announced, to hold a festival dinner of the society at the Holborn restaurant on Saturday, the 10th of May, in order to celebrate the twenty-fifth anniversary, and Mr. Statham, with his usual good nature, had promised to be present.

Mr. Statham was not informed that it was the intention of the members of the society to present him with a memorial on this occasion, in the shape of a silver inkstand or some other article for the study table. As about thirty pounds has already been collected, it is proposed to collect such further subscriptions as may be offered, and to allow the memorial to take such a form as may be in accordance with the wishes of Mr. Stratham's family.

The funeral took place on Saturday, April 26, at Norwood Cemetery. The first portion of the service was performed at St. Peter's, Walworth, of which church the deceased was rector. The Rev. S. P. H. Statham, of Aldershott, assisted by the Rev. Sherrard Statham, of Bimingham, both sons of the deceased, officiated. The funeral procession was accompanied by the Fourth Volunteer Battalion, of the West Surrey Regiment, and a detachment of the P. Division of Police, to both of which the deceased had been chaplain. A large number of photographers were present.

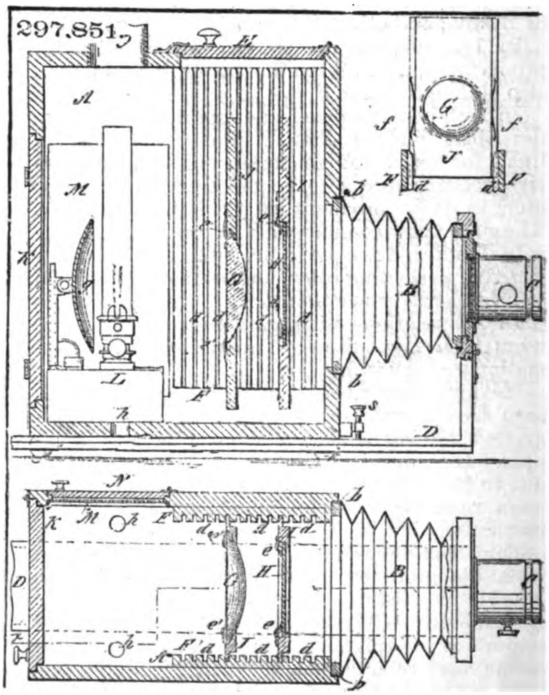
Looking back into our volume for 1859, we find that at the first meeting of the South London Society, held on the 10th of May, Mr. A. H. Wall occupied the chair, but at the following meeting, held on the 9th of June, the following gentlemen were appointed as the officers of the Society:—President—Rev. F. F. Statham; Vice-President—Mr. W. Ackland; Treasurer—Mr. F. Howard; Hon. Secretary—Mr. A. H. Wall; Committee—Messrs. Cotton, Clarke, Herve, Hannaford, Leake, Sen., and Leake, Jr.—*Photographic News*.

Patent Intelligence.

297,779.—METHOD OF PRODUCING ORNAMENTAL Relief Borders or Foregrounds for Photographs. Crosby M. French, Garrettsville, Ohio. Filed June 4, 1883. (No specimens.)

Claim.—The method of producing photograph-borders, consisting in first making a bas-relief border of any desired design, then taking a negative of such design, and finally using this negative in "printing in," in conjunction with a portrait-negative, as a border, substantially as and for the purpose set forth.

297,851.—ENLARGING-CAMERA. Thomas C. Roche, Brooklyn, assignor to E & H. T. Anthony & Co., New York, N. Y. Filed Jan. 30, 1884. (No model.)



Claim.—1. In an enlarging-camera adapted to use an artificial light, the camera-box having a lamp and reflector chamber in its rear end constructed with a series of interior grooves or slideways at or near its forward end, adapted for the reception and adjustment of the condensing and picture slides, and an opening to the grooves to facilitate the adjustment of the slides, said opening being closed by a cover or door, substantially as and for the purposes specified.

2. In an enlarging-camera, the combination with the box A, having a series of interior grooves, d d, near its forward end, of the slide J, fitted with a condensing-lens, the negative or picture slide I, and the bellows B, with its attached lens, essentially as and for the purposes herein described.

3. The slides I J, or either of them, provided with holding-springs at their sides, in combination with the slideways or grooves d d in the interior of the sides of the camera-box, essentially as and for the purpose herein set forth.

4. In an enlarging-camera, the box A, having a series of interior slideways in its front end portion, a lid or door for insertion and removal of a lamp and reflector, g, within and from its rear portion, one or more air-feeding inlets in its bottom, and a chimney in its top, over the place occupied by the lamp, substantially as specified.

5. The combination, with the box A, having a series of interior slideways or grooves in its forward end portion, for the insertion, removal, and adjustment up or down and toward or from each other of a negative or picture carrying slide or condensing-lens slide, or diffusing-glass, of a lamp and reflector, g, in the rear portion of the box, and a front lens or lens-tube in close adjustable connection with the forward end of the box, essentially as described.

6. In an enlarging-camera for operation by artificial light, the camera-box provided with a non-actinic glass in one or both of its sides, at or near its rear end, and constructed to form a lamp-chamber at said end, essentially as and for the purposes specified.

PHOTOGRAPHY.

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We publish elsewhere a communication from Willis & Clements, Philadelphia, to the effect that the information we published in our last number concerning licenses for platinum printing was an error, and further, that Mr. McCollin is no longer their agent. We can only say that our information came from a reliable source, as we supposed, and we cannot be expected to understand all the details of the "family quarrels" amongst these platinotype gentlemen. Our advertising columns are open to them for ventilating such matters.

◆

We were present the other day at some experiments that serve to indicate one application in which Dr. Vogel's eosine process will prove useful. The object was to obtain a photographic copy of a letter, which was written in violet ink on paper which had become slightly yellow by age. Wet collodion was the process used. Various arrangements of light and exposures of widely differing duration, were tried; even a yellow glass was placed over the original letter, but all in vain; it was impossible to get any contrast between the writing and the paper. Now, by using eosined collodion, and interposing a light-yellow glass between the original and the lens, a good copy could have been obtained without any difficulty, although, of course, the exposure would have been somewhat prolonged.

◆

We are in receipt of a circular from Douglass, Thompson & Co., 229 State Street, Chicago, announcing that they have made arrangements for a special train and special rates to the Cincinnati convention, leaving Chicago, Monday evening, July 28th. Fare for the round trip, $10. Those who contemplate availing themselves of this opportunity, should notify the above firm at once, in order that all necessary arrangements may be made. A remittance for tickets must be sent to secure attention. It is expected that a very large number will go on this train, and that the excursion will be a most enjoyable one.

◆

We have so long been accustomed to read in our English contemporaries such doctrine as this: "Buy your lenses direct from Dallmeyer or Ross, and you need ask no further questions," or, "It cannot be expected that foreign lenses sold at a fraction of the cost of those supplied by our best English makers, can compare with the latter in performance," that it is refreshing to meet such an admission as this in the editorial columns of the *Photographic News*:

> "Nor is it to be supposed that, as a rule, lenses even by the best makers give results so near the theoretical ones that the errors due to defects of workmanship can be entirely disregarded. * * * * The curves of a photographic lens are, as a rule, worked out mathematically to begin with, and every lens which was perfectly ground would give a certain ascertained result, and every one would give the same result as another made according to the same formula; but, as a matter of

fact, we know that in the case of the lenses turned out by our very best opticians there is considerable difference of quality. This is especially the case when we come to lenses of long focus and large diameters. In such cases, if we take two similar lenses and examine the central definition under a high power eyepiece, we shall often find great difference between the one and the other."

◆

It has long been pretty well understood on this side that there is a good deal of difference in quality between individual lenses of Dallmeyer's manufacture, especially amongst the "3 B" portraits, probably the most popular of them all; but we did not imagine that they had yet discovered this fact in London. "Verily, the world moves."

◆

We clip the following from the minutes of a recent meeting of the Edinburgh Photographic Society, and commend it to the careful attention of amateur societies and others interested in landscape photography:

> Mr. John Annan exhibited a large number of landscapes by Mr. Andrew Pringle, Mr. Hay, the late Mr. Black, and others, amateur and professional. Mr Annan had collected several sets, each representing the same subject, but by different hands, and was thus able to show great diversity of treatment. From the same point of view and on the same sized plate, one man produced a bold massive composition, while another (perhaps through using a wider angled lens) showed a poor, flat, insignificant result. Another set showed the great diversity of results from very slight modifications of point of sight; another set showed prints from the same negative, but cut in different sizes and shapes. In all these examples there was little difficulty in picking out one that stood out distinctly superior to the others, and Mr. Annan pointed out the reasons why, and showed how others had failed. The exhibition possessed high educational value.

◆

Mr. Humphreys, in his very interesting paper, read before the Engineers' Club of St. Louis, the greater part of which we publish in this number, says: "By far the most convenient dry-plate holders for an engineer are the paper holders, which add very little either in bulk or weight. * * * They are patented, not very well made and sold high, because we cannot get along very well without them."

We do not know what particular make of paper holder Mr. H. has been using, but so far as we know, the best ones in the market are sold at a price by no means exorbitant.

As to the question of patent, while there are patents (probably valid) on certain constructions of paper holders, Mr. H. is laboring under a misapprehension if he supposes that the general idea of using that material for the construction of plate holders is, or can be, patented. Probably the first paper holders made in America were made here in Chicago, by Messrs. Greene & Edgeworth, and, shortly after, by the writer. A description, with drawing, was sent to the *Philadelphia Photographer* at the time (it was before gelatine plates had become an established article of manufacture on this side of the Atlantic). So that Mr. Humphreys is at liberty to make such himself, or get them made by a paper-box maker or book-binder, if he chooses; although we do not think the saving in expense will repay him for the trouble.

◆

In the same paper Mr. Humphreys remarks: "I have never succeeded in taking a portrait in an ordinary room with less than thirty seconds' exposure when no stop is used." (Mr. H. used a No. 1 Rapid Hemispherical.)

There must, we think, be something wrong with our St. Louis friend's mode of working. We have, ourselves, made a fully timed portrait in an ordinary room (the sitter being at least nine feet from the window) on a four years' old Cramer plate, at 4:30 P. M., on a dark, rainy afternoon, in April last, in twenty-five seconds, using a lens working with considerably smaller aperture than that employed by Mr. H., and developing with oxalate.

We have a lady member of the Chicago Amateur Club, who, with the same lens used by Mr. Humphreys, has made a portrait indoors with a *drop-shutter*, the exposure with which could not have exceeded one-tenth of a second. It was somewhat undertimed, it is true, but not by any means a complete failure

◆

It is not long since that England was ahead of us in almost everything in the shape of photographic apparatus. Their cameras were better, lighter, and more convenient, besides being made in a much greater variety of shapes and sizes. The reason was not far to seek; it is the amateur who furnishes the market for such goods. As a general thing the professional uses only a very limited variety of apparatus, and takes what he can find in the market without much question as to whether something better might not be substituted; lightness and portability are secondary considerations, as the regular portrait operator rarely does outside work, and the professional landscape man usually, in fact, almost necessarily, includes a horse and wagon in his outfit.

But the case is different with the amateur, who frequently tramps many miles carrying his outfit on his back or in his hands. Ten years ago, however, the amateur was a *rara avis* in America, while he was, and had been for a generation a plentiful biped in England—so that the appartus makers over there had sufficient inducement to cater to the amateur trade, which inducement was entirely wanting here.

Now, however, all this is changed. Since the "amateur craze" set in new cameras and plate holders, or improvements in old ones, come so fast it is almost impossible to keep track of them, and now it is evident the tables are being turned. The latest instance which has come under our observation occurs in the "notes and queries" in the *British Journal* of May 9, where in answer to a correspondent, the editor says that paper plate holders are unknown in that benighted land. He "imagines they would not be able to stand much wear and tear." This may provoke a smile on the countenances of some of our professional readers who have been using them constantly for four or five years, and doubtless find them standing the "wear and tear" satisfactorily.

Further, the *British Journal* says "the camera must have a special adapter made for these slides." This is only true when using them with a box originally made for wooden holders; a new one could just as well be made to fit the paper holders, or the ground glass of an existing box could be changed to "register" therewith.

Probably some other of the recent American plate holders, such as the Blair "Featherweight," might provoke a little astonishment amongst our Transatlantic friends.

MOUNTAIN LAKE PARK—SUMMER SCHOOL OF AMATEUR PHOTOGRAPHY.

The management of the Mountain Lake Park summer resort have completed arrangements for opening a *Summer School of Amateur Photography* on August 1st, to continue for two weeks. The school will be conducted by Professor Charles F. Himes, Ph. D., of Dickinson College, who will give instruction by lectures and by directing the practice of the students. As will be seen from the accompanying outline of exercises, everything necessary will be furnished at an almost nominal charge.

The object of the school is primarily to add to the other sources of rational recreation afforded by the Park an attractive combination of scientific study and practice capable of adaptation to the time, tastes and wishes of all. The wide range of scientific facts and principles involved in the practice of photography and the numberless applications that bring it into contact with every one, give it an educational value of its own; but the recent advances have so simplified its processes and reduced the number of necessary operations, and consequent trouble and expense, that photography has rapidly taken the position of the leading, it might almost be said fashionable, amateur art. The camera of the amateur is omnipresent during the season, and is rapidly becoming a *vade mecum* of the tourist at home and abroad, capable of furnishing illustrations for notes of travel of peculiar value. Amateur associations and exchange clubs tend to keep up the short-lived acquaintanceship of the summer resort and stimulate intelligent prosecution of work. Many persons unfamiliar with chemical and physical manipulations, may meet with discouragement in the earlier stages of the practice, without the unwritten instructions of a teacher, that may tend to turn them aside from what at first sight seemed very easy and attractive. It will be the effort in the school to start the amateur fairly, so that he may be able to work his way by such assistance as he may be able to obtain from the literature of the art.

The location is peculiarly adapted to a school of the kind. Mountain Lake Park embraces 850 acres in the glade region of the Alleghenies, on the Baltimore & Ohio Railroad, midway between Deer Park and Oakland, 2,800 feet above tidewater. The atmosphere is free from the enervating influences of the season. The immediate vicinity affords many attractive excursions with the camera. The grounds are handsomely laid out and improved. Since the last season eight miles of additional drives have been constructed. The Park was established to meet the want of many for a mountain resort under such influences as would secure the greatest freedom of enjoyment with absence of many of the usual annoyances of summer resorts. The management is intelligent and liberal, and the attendance has been greater in numbers than expected, and of very desirable character. Excursion tickets good for the season will be sold from all principal points in the country, and where specific tickets for Mountain Lake Park cannot be had, those for Deer Park or Oakland will answer the same purpose, the fare being the same.

Exercises of the School.

I. ILLUSTRATED LECTURES on the Theory, History, Practice and Applications of Photography, by the Director, PROFESSOR CHARLES F. HIMES, Ph. D. These lectures, four in number, will be of a general character.

II. PRACTICE. Four Courses for practice by the student will be open for selection, in accordance with the regulations prescribed. These courses, each beginning with the opening of the school, are so graded, and will be so arranged as to times of practice, that all may be taken with profit by any one.

They are arranged as follows:

Course A.—Blue Printing, or Photographic Tracing Process, fee $1.00.

Course B.—Silver Printing Process, fee $1.50.

Course C.—Negative Process with wet Collodion, fee $2.50.

Course D.—Dry Plate Negative Process, fee $4.00.

Fee for Courses A, B, C and D, together, $5.00.

These fees include all necessary materials, and use of apparatus.

The school will be open on same conditions to ladies and gentlemen.

Formal application for admission to any of the courses may be made at any time to the Secretary of the Park Association, J. M. DAVIS, Esq., Oakland, Garrett Co., Md., but simple notice of intention to participate will be received after the 1st of June and placed on file, and should the applications in any course at the opening of the school exceed the limit of accommodations, preference will be given to those taking three of the practical courses, and in order of notification, provided formal application be made on or before July 31st, the day preceding the opening of the school.

Further particulars will be furnished by the Secretary on application.

PHOTOGRAPHY IN PRISONS.

An article on the title hereof by S. W. Wetmore, of the Joliet penitentiary, published in PHOTOGRAPHY of May 15th, 1884, was submitted to the attention of the writer.

Being a thing of the distant past in the Nebraska penitentiary at Nobesville, the experiment had at Joliet – the narrative referred to above, we should say,—caused some forcible smiles to expand upon the countenance of the writer of this paper. Some of the objections of the "old prison officers" and "of officers that had spent their life-time in handling criminals," to the end that photographs of convicts *could* not be taken, sound so new and fresh as to almost rival the grade of stories and yarns found in papers of the importance of the *Youth's Companion* etc., etc.

The Joliet penitentiary certainly made a step forward the day (January 1st, 1884) it commenced taking photographs of its convicts; and we certainly recognize Mr. W's right to be proud of having been the promoter of that step. But we submit that the mere report of the fact would have satisfied Mr. W's readers a good deal more than coupling with it matter and language decidedly out of place,and without claiming the novelty of the innovation as almost exclusively a Joliet improvement.

The question whether either criminal or penal officers have the right to take the photographs of prisoners is, at any rate and. to say the least, doubtful. No one will raise any objection when photographs are taken with the view of protecting society in the ferreting out of criminals, nor will any objection be put forth if the penal officers take the photographs of their convicts so as to enable them to recapture fugitives. But from this to parading in every detective or police office in the country a "Rogues' Gallery," we submit that there is a great difference.

Who has not, while visiting detective or police headquarters, heard the wonderful stories from the officer showing them the "Rogues' Gallery?" How many are those, in leaving the headquarters, who have not almost been convinced that all the photographs framed in patent racks, and all the stories connected therewith, are the victorious trophies and valuable mementoes of the officer so gentlemanly volunteering information and courtesies?

The writer has seen in one of these offices an 8x12 photo, representing what at first sight would appear like the inside of a tool manufactory, judging from the innumerable sorts and manner of tools hung up on the background or heaped up on the floor. Yet, in scrutinizing, he found a caligraphic inscription on the back of the photo. We will refrain from copying it here. Let it suffice to say that, under the signature of two well known criminal officers, the broad claim was asserted that all these tools (a car-load of them certainly) had been used in an attempt to rob the bank at R——, in Indiana.

Photographing criminals is a good innovation, providing common sense and decency are used in connection. Criminals themselves will not object to being photographed, when they know that no undue use of their likeness is made. There are certainly criminals, even if they be few, whom, after paying what is commonly called "their debt to society," mean to lead, and do lead, as honest a life as the average citizen. Why then, in common sense's name throw anything in their road? Why hang them in public places? Why take delight in having visitors to police or criminal headquarters take particular notice of those very men, perhaps, when piloted through the "Rogues' Gallery?"

At the Nebraska State penitentiary, these considerations preside in the photographing of convicts, and it were to be hoped that all penal institutions use the same discretion. At Nobesville the visitor will see no "Rogues' Gallery," no "Prison Album," and neither are boasted of. When the request is made by some visitor that the style of photographs be shown, the photos of dead convicts generally are exhibited. The visitor goes away satisfied, and the officer tendering the courtesy has the inner satisfaction to know he has thrown nothing in any one's way. When photos are called for by criminal officers, no matter whence the call comes, for the purpose of aiding the ends of justice, the call is always courteously responded to, and every facility tendered in all cases.

Mr. C. J. Nobes, the warden of the Nebraska penitentiary (a Joliet boy, by the way), introduced the innovation upon his appointment as warden in September, 1880, and since, the photographs of all the convicts are matter of prison record.

The practice at Nobesville differs from the practice at Joliet, and we give the following as a result of four years' experience, without claiming perfection:

Two photos of each prisoner are taken. The first, as he appears on his arrival, showing three-fourths of the body. It is established that the style of dressing and the cut of beard and hair, hat wear, etc., are as good a clue as any for identification. The second photo is taken when the prisoner is clean shaved. On top of the head, and attached to the iron head-rest, is a card after this style:

1884
Neb. S. P.
880

By that means the photo identifies itself on its face, and furnishes all the information wanted in subsequent years. The number of each convict is simply slid in the card. The negatives are carefully preserved, and no mistake can be made when one particular number is wanted. No writing appears on the photos and they are kept under lock, divided by 50.

Mr. W—— concludes his article in these words: "The 'Prison Album' of the Joliet penitentiary is destined to become one of the greatest rogues' galleries in the world. It already contains the pictures of nearly three hundred men who have entered the prison this year."

Let him permit us a suggestion right here; he will attain the summit of his ambition two years earlier anyhow: The *number* of pictures is what he has in perspective. Let him take those of the 1,600 convicts now in Joliet. It will not be long then until the "Prison Album," etc., etc. * *

J. G.

LIGHT-PROOF DRY PLATES.

The correspondent of the *English Mechanic* who is quoted in the May 15 issue of PHOTOGRAPHY, undoubtedly gives the true explanation of his failure to produce any effect on a dry plate by exposing it for five minutes to an Argand gas burner covered with ruby glass, a lamp with an orange shade and a "three-foot disc of white light on ceiling," when he says "the Americans must have some plates which are very different from ours!" Our manufacturers have probably produced at times some not very rapid plates, and certainly some not very desirable in other respects, but the most dismal failures of the most utterly inexperienced makers would never suffer by comparison with the "Kingston Special," if the experiments of this writer have any significance whatever. Such plates with their anti-fogging properties would be a genuine boon to most American out-door photographers who have had so much trouble in keeping light out of cameras and plate holders, as well as during the development, provided, of course, they were not obliged to make use of them in taking photographs. Having had some experience last summer with English plates, I am quite prepared to learn from this source that the plates in use there are exceedingly slow, though I should not have expected quite the extreme insensitiveness claimed by this correspondent, if the particular plate used by him is a fair representative in this respect of the commercial plates made in Great Britain. His experiment would have been more satisfactory if he had protected all but a small portion of his plate from this array of lights, and then developed the plate. He would have then easily seen the difference, if any, in that part of the plate, which for five minutes had all this light concentrated upon it.

During the fall of last year, I exposed a number of dozen English plates on both sides of the channel, which were developed after my return to Chicago. These were the most rapid plates made by Wratten & Wainwright, which, so far as I could learn in London, were at least as good in all respects as any to be found. As I remember now, the price was 4s. 6d. per dozen, making them cost considerably more than our plates here, although many of the English plates are sold for much less. As these plates had to be developed when it would be too late to correct any error in time, I asked the parties at the office of the manufacturers to expose a couple of them, and then develop them for my instruction. They declined to go out on the street and make any exposure themselves of the plates, but expressed a willingness to develop them. I then went out a short distance and took a couple of pictures, varying the time as far as I thought it safe to do so. They were then developed by Wratten & Wainwright, one with pyro and the other with oxalate. They stated they thought the pictures were a little over-exposed, but seemed to think the results were fairly satisfactory, although the negatives were very poor in both cases, and such as we would not think worth saving at all. I took a quantity of these plates with me on the continent, and gave them rather more time than I would American plates; but when they came to be developed after my return, it was found they were, with few exceptions, greatly under-exposed and many of them, with ten or fifteen minute development, had only the faintest suggestion of a picture, and were complete failures for any use. Better results were obtained from German plates purchased in Dusseldorf and Berlin, but in all these foreign plates the picture was apt to be thin and weak, and at the best not very satisfactory. Unopened boxes of both kinds of plates were brought back and experimented with here, with substantially the same results. Another and cheaper brand of much advertised English plates were tried here, but were so hopelessly fogged in manufacture that they were utterly worthless.

The moral of all this is if you go to Europe, take your plates with you, and all that you are likely to use, and you will avoid disappointment when you come to develop pictures which you may never have an opportunity to duplicate. All the really fine pictures made on this trip were on plates taken from Chicago, principally the old Beebe plate, with one or two boxes of the Iowa City plates. Most of these were entirely satisfactory.

It is only fair to add that lately I have had an opportunity of trying a box of the "Britannia" English plates and got excellent results from them. They are rapid enough for any purpose, remain bright and clear in developing, and make strong and brilliant negatives.

S. W. BURNHAM.

Obituary.

HENRY BADEN PRITCHARD.

It is with deep regret that we have to announce the death (intelligence of which reached us too late for insertion in our last issue) of this accomplished photographer, journalist and *litterateur*, which occurred on Sunday, May 11. Mr. Pritchard had been ill for a week or more with an attack of pneumonia, but was progressing favorably until the evening in question, when a sudden relapse occurred, and he died almost immediately.

Mr. Pritchard was the third son of the late Andrew Pritchard, the well known microscopist and author of the *History of Infusoria*, as well as the constructor of diamond microscopic objectives of high refracting power.

He was born in November, 1841, and at the age of twenty entered the Royal Arsenal at Woolwich, where he remained without intermission until the date of his death, and where, for many years past, he had the direction of the photographic department.

In 1868 Mr. Pritchard joined the Photographic Society of Great Britain, to the council of which he was elected in 1870. Two years later he became its Honorary Secretary, an office which he continued to hold for three or four years, and in 1883 was elected one of the Vice-Presidents. Mr. Pritchard contributed numerous papers to this society, and occasional articles from his pen appeared in various journals, but chiefly in the *Photographic News*, with which he was intimately connected as a contributor for many years, and of which he became managing proprietor on the death of Mr. George Wharton Simpson, a little more than four years ago.

But photography alone did not claim Mr. Pritchard's energies, for he was a prolific contributor to general literature, the range of his powers extending from newspaper leaders, scientific essays, and lighter magazine articles, to three volume novels. In the last named department he gained some distinction with *Dangerfield, Old Charlton, George Vanbrugh's Mistake*, and *The Doctor's Daughter*, while his *Tramps in the Tyrol*, and his latest effor —but just published—*A Trip to the Great Sahara with the Camera, by a Cockney*, showed his capabilities as a descriptive writer.

A member of the Savage, Whitefriars, Urban and other literary clubs, Mr. Pritchard was intimate with many of the foremost men in connection with literature, art, science and the drama, and his bright genial disposition, his fund of humor and his kindly nature made him friends everywhere. In social life he was especially a favorite, and whether the occasion was a children's party, or a more sober literary gathering he was equally able and willing to contribute his quota to the general enjoyment.

In 1873 Mr. Pritchard married Miss Mary Evans; this lady and four children survive to mourn his loss. The funeral took place on Thursday, May 16th, at Abney Park Cemetery, within but a short stone's throw of the last resting place of his former friend and predecessor, G. Wharton Simpson. A brief address took place, after which the coffin was lowered into the grave, where already lie his father, a sister and a nephew.

Looking around at the sea of faces during the delivery of the mournful address, it was easy to see that no mere feeling of curiosity or of formal duty had drawn many to the spot. The sorrow was unmistakably genuine; and the large attendance, despite the fact that no public notice had been given of the sad event, spoke volumes for the esteem in which Mr. Pritchard was held.

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THE "HAPPY MEDIUM;" OR DARK ROOM ILLUMINATION.

BY ANDREW PRINGLE.

It is a curious fact, but it *is* a fact, that mankind insists on running into extremes; that the "happy medium"—in this case the "light medium"—is the very last mark that we ever hit. The present or late discussion on dark-room illumination is a fine example of this idiosyncrasy of humanity. We have the premiss that all light is hurtful to the sensitive salt of silver over and above what passes through the lens from the object being photographed; so we have a set of men who say—"Let us work in total darkness." We have another axiom—that in order to see what we are doing we must have a certain amount of light in our developing-room. Up starts a set of men who exclaim—"Let us work in broad daylight, or as near as we can get to broad daylight, without instant and utter ruin to our plates!" But this is not all. We find some men saying—"Red light, *used as I have been using it*, hurts my eyes." These men banish red light entirely from their consideration and laboratory. Orange light offends and hurts another using it in a certain quantity and through a particular medium. He, too, abolishes orange light in every quantity and shape. But the greatest human perversity takes this form:—"Red light (or orange light) hurts and offends me; therefore it hurts and offends my neighbor. Consequently, I shall inveigh against red (or orange) light, and despise and execrate the man who pretends to prefer orange (or red) light!" I write this in all earnestness, and not merely trying to make a clever satirical epigram. I might concisely sum up the whole gist of all that has been written and spoken on the light question in a few words such as—"Use any light you like, in any manner and quantity you like, so long as you get efficiency without damage." But in order to guide tyros and others in their choice of a light much has been written, this article is being written, and probably much more will be written.

If no light at all were required for the development of a plate this article and all others on the same subject would be superfluous; but light of some kind *is* required. For the preparation of gelatine plates light is not required; blind people and machinery can do the whole affair, so that I put these operations out of consideration. By no means that I know of could a blind person judge of the progress of developement on a sensitive, exposed plate. But various intensities of light are required for various purposes and by various operators. One man's eyes are better than another man's; one man's eyes are better in a particular color of light than his eyes in another color. Already we have an element of uncertainty. Again: where exposures have been one after another made upon similar objects in a slightly-varying quality of light, as in studio work, less careful examination of the developing plate is required than where exposures have been made on landscapes in different situations on very different objects, and during a period extending over days or even weeks. Another element of doubt—another instance of the necesity for the "happy medium."—*British Journal of Photography.*

[To be continued.]

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Applications for space at the Cincinnati convention should be made *at once* to the secretary, Leo Weingartner, Sixth and Central Avenue, Cincinnati, Ohio. In all cases freight or exhibits must be prepaid.

Correspondence.

MARSHALLTOWN, IOWA, May 22, 1884.

EDITOR PHOTOGRAPHY:—*Dear Sir,*—Since the publication of my letter I have received several communications regarding formulæ. As I am no process monger, will you publish mine?

Get good chemicals, a safe light, and clean rooms.

No. 1.

Bromide potassium	555 grs.
Iodide "	10 "
Nelson's No. 1 gelatine	250 "
Water	13 oz.

Dissolve and keep at about seventy degrees F.

No. 2.

Nitrate of silver	700 grs.
Water	4 oz.

Add liquid ammonia until the solution turns brown, and *almost* clear; if not quite clear in a few minutes, add a drop or two more.

No. 3.

Nelson's No. 1 gelatine	260 grs.
Coignett's "	40 "
Water	12 oz.

Melt at seventy or eighty degrees.

To mix put No. 2 into a sixty-four oz. ammonia bottle, rinse the silver from small bottle with half an ounce of water, and put with the rest. Now add No. 1 to No. 2, half an ounce at a time, (more or less) shaking a minute each; when all mixed, let set until a drop put upon a plate of glass and examined by lamp light looks blue. Add No. 3. Shake and pour into a dish to set. A new clean 11-14 porcelain is best, set on broken ice, but a quart bowl will answer, only it takes much longer to set. When well set, wash. For the various devices for washing see Capt. Abney's book, "Photography with Emulsions." When washed, drain, say half an hour; remelt and add of hard or soft gelatine, according as the weather is very hot or otherwise,

Gelatine	200 grs.
Dissolved in water	5 oz.

Also add

Alcohol	6 oz.
Glycerine, ½ to 2½	(½) "
Chrome alum	1 gr.
Chloride copper	1-16 "

Allow enough emulsion to each plate, so that wet (when set) or dry you cannot see the shape of the lamp flame through it; as heavy as that is heavy enough.

Any good developer will do.

I have not finished experimenting with glycerine.

One grain of chloride of copper will ruin sixty-four ounces of emulsion, the amount that the above formula makes. It makes the plate clear but insensitive. As the above formula gives good results in my hands, I am sure that others must succeed with it. Hoping such will be the case, I am,

Respectfully yours,
A. H. BONNEY.

Focusing.

Editor Photography:—In the last number of Photography some criticisms were made with regard to the use of a fixed mark for out-door work.

I have stated that nine-tenths of all out-door negatives were made with the plate in the *principal* focus of the lens, and I repeat the statement without fear of successful contradiction.

All instantaneous views of boats, street scenes, or objects in motion, will naturally be taken at this focus, as it is the best possible.

I think the critic must have been under some misapprehension with regard to what was meant by infinite distance focus. With a Darlot No. 1 lens objects at forty feet distance are practically sharp at the principal focus, with the full aperture.

I do not claim to know anything about artistic photography, and am at a loss to understand how any part of negative can be too sharp. I have always been under the impression that sharpness of outline was a necessary quality in every outdoor negative. When objects at the principal focus are sharp with the full aperture, everything in the foreground, within six feet of the camera, will be in focus with the five millimetre stop, and for instantaneous views, the twelve millimetre stop will answer every purpose, the full aperture of the lens being twenty millimetres. On the theory of the editor I would like to know what kind of an instantaneous negative he would get, with the focus set for the foreground and the lens stopped down for sharpness for the object to be photographed.

I do not wish to have it inferred from the foregoing remarks that the amateur should always keep his camera at the fixed mark. There are subjects in which the salient features of his picture will lie at a distance of twenty feet or less. In such a case he will naturally focus for it with the full aperture and then stop down for the immediate foreground. The use of a mark at the principal focus was not the invention of the writer, but any one who once tries it will soon be convinced of its convenience.

Under many circumstances, due to want of sufficient light or other causes, it is difficult to know when one has the best focus. In such a case, if the object is at least forty feet off you may be sure that the principal focus is more perfect than anything you can get at the time.

G. W. Hough.

Clinton, Iowa, June 3, 1884.

Editor Photography:—*Dear Sir:*—Photography for June 1st received, and in it I see that almost every officer of the P. A. of A. of last year comes in for a good round dose of censure, myself included. Also they begin freely to criticise those of the coming convention in anticipation of what they may do.

When *you* publish, or *any one else* asserts, that there was no report made by myself of the monies which passed through my hands, it is false, and you and they *ought to know it*, as it was published just as soon as facts could be got together after the convention, in three or four of the leading journals of the country. In that report I state I had the promise of between $300 and $400 more. $300 of it was in *promises* of $150 each from two of the big firms who are now doing the most howling about "rottenness."

We have never had a convention that passed off more pleasantly and orderly, nor one where *every* officer seemed to do his utmost to have everything just right than at our last, and we have never had one where a larger amount of money has been collected, and all bills paid, and paying over to the incoming treasurer as large an amount as was done at our last.

The trouble seems to be that I did not in my report state just how much each party contributed to the association. I certainly reported every cent taken in, and my vouchers (which are now in the hands of the present treasurer) will show what I did with it.

As I understand it there is no official organ of our association, and I did not know that I was called upon to furnish the name of every party contributing and the amount contributed by them to all of the publications in the country.

I do not claim to have made a flowery report, but merely statements of facts, and no one can realize the difficulty of the task laid upon them as treasurer of our association who has not undertaken it; no one paying their dues (with but few exceptions) until at the meeting of the association, and then the whole thing comes together.

I can only say I did my best, and the money I received *was* accounted for, *every cent* of it, and a larger balance turned over to the incoming treasurer to begin housekeeping with than has ever been done before.

This is all I shall say in vindication of my action.

Yours etc.,
J. H. Reed,
Ex-Treasurer P. A. of A.

Rochester, N. Y., June 5, 1884.

Editor Photography:—*Dear Sir:*—At the time I wrote you criticising the article in your May 15th issue, in regard to association matters, it did not occur to me that the statement you therein made that "no proper report of expenditures had been made by the treasurer," was an error.

Without looking the matter up, I acquiesced in the statement and said, "It might, to some, have a suspicious look." Treasurer Reed *had* made a very complete report and the article did him an injustice, which I trust you will take the trouble to correct, and greatly oblige,

Yours truly, J. H. Kent.

Philadelphia, June 7, 1884.

Editor Photography:

Dear Sir:—Our attention has been called to a recently published article in Photography, of which the following is a part:

"We are informed that Mr. T. H. McCollin, who controls the Willis platinum printing process in the United States, has notified stock dealers that they may hereafter sell platinotype materials to any one, licensees or not."

In the first place, we wish to say that T. H. McCollin does not control, and never has done so for a single moment, the platinum printing process in the United States; that he is no longer even an agent for the sale of materials for the process, and that he has no interest in the patents or process whatsoever other than his privileges as a licensee, which are the same as those of all our professional licensees.

Secondly, the statements that it does not require a license to use or work the process, and that stock dealers may sell platinotype materials to any one, are absolutely false and designed to do us great injury. Our United States patents are dated and numbered Feb. 8, 1876, No. 173,381, and March 18, 1879, No. 213,484, respectively, and any one who desires to procure a copy can do so from the patent office at Washington.

We trust, sir, that in justice to ourselves and our licensees, you will give this matter the publicity that we think it merits. Respectfully,

WILLIS & CLEMENTS.
Prop'trs of Platinotype Process.

Meetings of Societies.

THE ROCHESTER PHOTOGRAPHIC ASSOCIATION.

Dr. Charles S. Forbes, of Rochester Free Academy, delivered an interesting lecture before the Rochester Photographic Society at its last meeting, May 19th. Among the visitors present were J. H. Kent, President of the P. A. of A., also several photographers from out of town.

The topic of the lecture was the theoretical consideration of the action of the alkaline development of gelatine dry plates.

The subject proper was prefaced by a brief review of the atomic theory of matter as it is now received by scientists. This prepared the society to more readily understand the various technical terms used in the discussion.

The manner in which the silver salts are formed in the gelatine emulsion was next explained. The principal salt formed is, in all emulsions, silver bromide. Small quantities of silver iodide and silver chloride are often used in combination. Inasmuch as the silver bromide is the foundation salt in the emulsion, the lecturer gave his attention principally to this in consideration of the action of the developer.

The silver bromide in the emulsion is formed as follows: An aqueous solution of silver nitrate is added to one of some bromide salt as potassium bromide. A double decomposition occurs which may be indicated as follows:

$$\left\{\begin{matrix}\text{Potassum Bromide}\\ \text{K Br}\end{matrix}\right\} \begin{matrix}\text{and}\\ +\end{matrix} \left\{\begin{matrix}\text{Silver Nitrate}\\ \text{Ag NO}_3\end{matrix}\right\} = \text{become}$$

$$\left.\begin{matrix}\text{Silver Bromide}\\ \text{Ag Br.}\end{matrix}\right\} \begin{matrix}\text{and}\\ +\end{matrix} \left\{\begin{matrix}\text{Potassium Nitrate}\\ \text{K NO}_3\end{matrix}\right\}$$

The silver bromide is held in suspension in the gelatine. The soluble salts are thoroughly washed away.

Now when the molecules of silver bromide (Ag Br) are acted upon by light they undergo a change and molecules are formed having the composition represented by $Ag_2Br.$, called silver subbromide thus:

$$\left\{\begin{matrix}\text{Silver Bromide}\\ \text{Ag. Br.}\\ \text{Ag. Br.}\end{matrix}\right\} \begin{matrix}\text{acted on}\\ \text{by light}\\ \text{becomes}\end{matrix} \left\{\begin{matrix}\text{Silver Sub-}\\ \text{bromide}\\ \text{Ag.}_2\text{Br.}\end{matrix}\right\} \begin{matrix}\text{and Bromine}\\ +\\ \end{matrix}$$

From the molecules of silver subbromide the metallic silver may be quickly precipitated by the developing solution. Whereas from the silver bromide it is very slowly reduced.

It will be understood then, that when the plate is exposed in the camera, the developable image is formed by the light changing the molecules of silver bromide to those of silver subbromide.

The office of the developer is then to precipitate the silver from the silver subbromide and form the visible image on the plate.

The credit of the discovery of alkaline development is due Mr. Borda, of Philadelphia, and Mr. H. T. Anthony, of New York.

Mr. Glover, Mr. Leahy and Major Russell, of England, gradually brought it up to its present condition. To the latter we are indebted for the use of potassium bromide.

The alkaline developer consists of three things: A strong absorbent of oxygen, like pyrogallic acid, an alkali, and a soluble bromide, like potassium bromide.

The first two are the only ones necessary to reduce the silver from the silver subbromide.

The chemical reaction of the pyrogallic acid and alkali (ammonia) on the silver subromide may be indicated as follows:

$$\left\{\begin{matrix}\text{Silver Subbromide.}\\ \text{Ag.}_2\ \text{Br.}\\ \text{Ag.}_2\ \text{Br.}\end{matrix}\right\} + \text{Pyro.} + \left\{\begin{matrix}\text{Ammonia}\\ \text{N H}_4\text{H O}\\ \text{N H}_4\text{H O}\end{matrix}\right\} =$$

$$\left\{\begin{matrix}\text{Silver.}\\ \text{4 Ag.}_2\end{matrix}\right\} + \text{yro. O} + \left\{\begin{matrix}\text{Ammonium Bromide}\\ \text{N H}_4\ \text{Br.}\\ \text{N H}_4\ \text{Br.}\end{matrix}\right\} + \begin{matrix}\text{Water.}\\ \text{H}_2\text{O}\end{matrix}$$

That is, the pyro., having a strong affinity for oxygen, takes it from the ammonia, converting it into ammonium and water.

The ammonium thus liberated combines with the bromine of the silver subbromide, forming ammonium bromide, and the metallic silver is deposited to form the visible image on the plate.

The newly deposited (nascent) silver has this peculiar property. It will combine with the adjacent molecules of silver bromide and form silver subbromide. Thus:

$$\left\{\begin{matrix}\text{Nascent Silver}\\ \text{Ag.}\end{matrix}\right\} \begin{matrix}\text{and}\\ +\end{matrix} \left\{\begin{matrix}\text{Silver Bro'ide.}\\ \text{Ag. Br}\end{matrix}\right\} = \left\{\begin{matrix}\text{Silver Sub-}\\ \text{bro'ide}\\ \text{Ag.}_2\ \text{Br.}\end{matrix}\right\}$$

From these new molecules the silver is deposited in turn and thus the process goes on until a much larger quantity of silver is reduced than could be possibly formed from the original silver subbromide.

Just what is the chemical reaction of the potassium in controlling development is not positively known. It has been suggested that the bromide combines with the Silver Subbromide and converts it into Silver Bromide. Thus:

$$Ag._2\ Br + K\,Br = 2\ Ag.\,Br + K.$$

So that when a small quantity is added the effect of the light is partially undone.

The effects produced by using first an increased amount of ammonia and then an increased quantity of pyro. were explained.

Dr. Forbes' remarks were listened to with marked interest by the members of the society, and at the conclusion of the lecture, on motion of Mr. Wardlaw he received their thanks.

DISCUSSION.

The question for discussion was as follows: "How to light and develope a group as follows: A lady dressed in black, a man the same, and a child in white; the lady and child of light complexion, and the man dark."

Mr. Wardlaw said: "If there is time to bring out details in drapery in the man, it would be apt to over develope the lighter portions. When the image of the man was developed sufficiently, I would stop and proceed to obtain density for the rest. A weak solution of bromide might be laid over the image of the lady and child, and be allowed to remain a short time. I would then wash it off and proceed to obtain density; much can be done in lighting."

Mr. Kent:—"It does not seem to me so difficult to handle such a group, as the question would imply. The stronger light should be thrown on the darker objects. The exposure would be timed for the darker portions of the picture. If you light for the darker portions, the lighter will take care of themselves. I don't think there are the difficulties in lighting which the question would seem to imply. It is often difficult to light for a single object; say a lady dressed in white, with dark hair or her face shaded. You would always time it for the darker portions. I think dry plates best for handling such a subject. There is a greater latitude in handling dry plates than in handling wet plates."

CHICAGO PHOTOGRAPHIC ASSOCIATION.

The regular monthly meeting was held at their room, 229 State St., Wednesday evening, June 4th, Dr. H. D. Garrison, President, in the chair. The attendance was small, and very little of interest transpired.

On motion of Mr. Gentilé, it was resolved "that this association expresses its deep regret at the loss photography has sustained in the untimely death of Mr. H. Baden Pritchard, and sympathizes with his family and friends in their bereavement."

Mr. Miehle asked for information as to the best method of purifying water without distilling.

Mr. Markley replied that, according to the *Scientific American*, the organic matter could be thrown down by adding a few drops permanganate of potash solution, and sunning. Filter, of course. The Chair considered our lake water pure enough for all practical purposes, as it only contained six grains to the gallon of foreign matter. Prof. Hough asked what kind of water was generally used by professional photographers in this city for negative baths. Several members replied that they used lake water, which was as good as any, provided the solution was rendered very slightly alkaline and sunned for a day before using. Distilled water frequently contained worse impurities than lake water.

The secretary called attention to a circular he had received from the management of an International Photographic Exhibition to be held at Northampton, England, in December and January next, and stated that he would be happy to furnish detailed information to intending exhibitors.

Mr. Alfred Hall, who has been absent from these meetings about a year, happening to be in the city in his capacity as traveling agent for the St. Paul Dry Plate Co., was present, and, on invitation, related some of the impressions he had picked up in his recent travels. One of the most prominent of these was, that the dry plate men devote altogether too much attention to educating photographers in the manipulation of dry plates, which would be much better employed in improving the quality of their plates. In many cases which had come under his personal observation, the ubiquitous "demonstrator" had been guilty of a disregard of the well-known proverb anent teaching your maternal ancestor how to extract the nutriment from eggs.

One instance in particular he would relate, without mentioning any names. One of the partners in a well-known Western dry plate factory,—well known to the speaker as one of the best wet-plate operators in the United States—had been "demonstrating" his plates to the proprietor of a large gallery some time before Mr. Hall called on him with a similar object. This proprietor assured Mr. H. that if he had not known from his own experience that the plate in question was capable of vastly better results than the "demonstrator" succeeded in getting from it, he would not accept it as a gift. The fact is, the average photographer who has used dry plates awhile knows far better how to handle them than the makers.

If the manufacturers would devote a little more attention to making good plates, and less to the aforesaid occupation of educating their maternal ancestors, he thought it would be much better.

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How pleasant it would be if all sitters were as sensible and as philosophical as the lady who some time ago sat to a well known photographer. In criticising the proofs, she remarked of one, that according to some of her friends she looked like "a simpering idiot," naively adding, "but I suppose it is like me." Subsequently she wrote: "Yes, the 'simpering idiot' is the best"; and gave a good order from this particular negative. "Save, oh! save me from the candid friend," is the prayer which ought to be offered up by all who have their portraits taken.—*Photo. News*.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

The June meeting was held on the evening of the 3d inst., President Newton in the chair. Mr. J. B. Gardner, chairman of Executive Committee, read the annual report of that committee, going over the work of the meetings since November last.

A paper by Mr. P. C. Duchochois, "On the Action of Light on Photographic Silver Compounds" was read by the Secretary. Considerable discussion followed. Afterward the question of the invention of fuming albumen paper came up, and elicited a good deal of historical information from some of the older members.

The Section adjourned to the first Tuesday in September.

A full report of this meeting will be published in our next number.

Reviews.

CHEMICAL EFFECT OF THE SPECTRUM. By DR. J. M. EDER. Translated and edited by CAPT. W. DE W. ABNEY, F. R. S. NEW YORK: Scovill Manufacturing Co. CHICAGO: Douglass, Thompson & Co. Pp. 90, 8vo. Price 50¢.

As Capt. Abney very justly remarks in the preface, the size of this work can by no means be taken as a measure of the labor it involved. Indeed, the author seems to have ransacked the chemical and photographic literature of more than a century for his materials. As usually happens in a faithful compilation of the literature of an interesting but abstruse subject, there are many repetitions of facts, and not a few contradictions by different observers.

The work is replete with useful hints to manufacturers and consumers of dry plates. Thus on page 40 it is stated that "aldehyde green and picrate of methyl-rosaniline greatly increase the sensitiveness of silver bromide for the yellow-orange (between C. and D.) and at the same time for the blue." Again of eosine he says: "Added to the silver bromide emulsion, it sensitizes it for the green rays. Films of this nature are infinitely more sensitive to the green and yellow than to the blue and violet of the spectrum." On the same topic on p. 46 he remarks: "Husnik believes that a short preliminary exposure of the silver bromide to violet light really increases the sensitiveness to the yellow and red (above all with the chloride and fluoride of silver), and the united experiments of several years on the action of short preliminary exposure give weight to his opinon."

While it is impossible to summarize the facts given in this work, without practically reprinting it, we can epitomize the author's chief conclusions:

1st. Every color of light, including the ultra-violet and infra-red rays, is chemically active.

2d. Those rays absorbed by a body act upon it chemically.

3d. Red light causes oxidation of metallic radicals.—violet and blue light reduction; and yet, SH_2 is most rapidly reduced in red light.

4th. Coloring matters mixed with sensitive salts, may increase the sensitiveness of the latter to certain rays and hence are called "optical sensitizers."

5th. Substances which can unite with the elements disengaged by light may aid its action, and are called "chemical sensitizers."

The book is sadly marred by numerous inaccuracies as well as by faulty grammatical constructions. Of the latter the following from page 68 are examples: "The direct decomposition of a compound by the luminous rays, *do* not go exactly with the luminous latent image."

"A great part of the changes induced by the action of light *are* also produced by elevation of temperature."

We are loth to believe that the original by Dr. Eder, or the translation by Capt. Abney, contained these and a host of similar misconstructions; but in any event, they should have been eliminated from the American edition. Of course, it goes without saying, that this, like most, if not all of the Scovill publications, is worth far more than the small price charged for it.

H. D. G.

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THE AMATEUR PHOTOGRAPHER: a Manual of photographic manipulation. By ELLERSLIE WALLACE, JR., M. D. Philadelphia: Porter & Coates.

The circumstance that this little volume, unlike almost all others of similar title, is not published in the interest of any stock dealer or manufacturer, would of itself be sufficient to entitle it to careful perusal and consideration, but it also possesses intrinsic merits beyond any of its competitors with which we are acquainted. As indicating the general tone of the work we give some extracts from its preface:

> Photography cannot offer any exception to the rule that all beginnings are difficult. But still, a modicum of attentive study so planned as to be carried on intelligently, and to master *principles*, coupled with the desire of doing really good work, will soon surmount the initiatory troubles. The *technique* having once been acquired, the field will open in ever-widening circles to the more essentially artistic kinds of work. * * * * The advent of the gelatino-bromide process with its ready prepared plates and outfits specially arranged for them has called forth a large number of new workers. Some of these may complain of the study and toil involved in the arrangement of a good composition—quite as much in many cases as if pencil or brush were employed, and some even, when their first ardor has been cooled by failures, will further complain that it is hardly worth while to waste trouble on an art dealing in monochrome exclusively. Let such as these be reminded of the sublime effects produced by great masters with the help of one color only.
>
> And another word to the new-comers: Let them not ignore all the older processes and pass them by an unworthy of attention. No greater mistake could be made. Where it is a question of instantaneous exposures, gelatine is *facile princeps*, but for ordinary time pictures the results given by it are not one whit better than those of any good standard dry plate; so that the matter actually reduces itself to this, that the great recommendation of gelatine plates is the fact that they are more sensitive and can be bought ready made; or, to put it in other words, that the photographer has a large and interesting share of his own proper work done for him by the manufacturer. When we seek simply for the best chemical effect in a photograph that our present knowledge enables us to make, we find i

> —just where we might expect—in the standard wet collodion plate. * * *
>
> The value of the photographic camera in tempting forth those who lead confined lives into the fresh air of the woods and fields is becoming more and more felt every day, and those who once experience the pleasure of out-door photographic trips with a few congenial spirits, will in after years look back with no ordinary fondness upon the perhaps crude beginnings of their career, and without doubt seek fresh opportunities of repeating their photographic excursions.

In the chapter on lenses, Mr. Wullace avoids the usual error in works of this class, viz., that of leading the beginner to believe that he can do all sorts of work with a $10 outfit; but it seems to us that he rather inclines to the other extreme. Thus, he recommends the beginner to procure a 5x8 camera provided with a pair of Dallmeyer's six inch rapid rectilinears, and also with either a seven inch wide-angle landscape, or eight inch rapid rectilinear. Now, while we may admit this to be sound advice, provided money is no object, yet we fear many would be deterred entirely from following the art by the prospect of an initial outlay of $119 for lenses alone, and even then no provision is made for "wide angle" work on either the stereo or 5x8 size.

Moreover, we think our author hardly does justice to the single combination lenses, which, after all, for general outdoor work, where long straight lines do not occur, and great rapidity is not needed, will give better satisfaction in proportion to their cost than any others. And if a lens of fairly long focus be employed—say eleven or twelve inches for a 5x8 plate—architectural work can be rendered by them without perceptible distortion, while as to rapidity, some of the greatest feats we know of in instantaneous work have been performed with them. Before leaving this chapter we quote an extract which we thoroughly endorse: "Thus it will be seen that, if a varied class of photographic work is to be attempted, the outfit of lenses will have to be varied and increased accordingly; and the more experienced the operator becomes, the more he will recognize the impracticability of doing justice to all kinds of subjects with a limited stock of lenses."

Passing on to cameras and appurtenances, we are at a loss to understand why our author should have selected that form of plate-holder for illustration and description which is admittedly one of the worst. He does not even let his readers suppose that it is possible to make one in any other way.

Mr. Wallace advocates a drop shutter of similar construction to that described by Mr. Burnham in our first number, and gives some wholesome cautions as to the use of wood for the sliding shutter.

In advocating a changing-box in preference to double holders, we think he is a little behind the times—the changing box is rapidly becoming, if it is not already, a thing of the past. So far as weight and bulk are concerned, it offers no advantage over the more modern form of double holders,—at least for such sizes as 5x8,—while its cost is much in excess, and it is more troublesome to work, to say nothing of the objection mentioned by Mr. W. himself, that the glass must be cut very carefully to size, or it will not work.

It is unusual to meet with such sentiments as the following in any American work: "English apparatus is becoming more and more used by American amateurs. It is undoubtedly superior in model, lightness and finish. To one who wishes for the very best obtainable outfit, the writer would advise an English camera, holders and changing-box."

In chapter IV—"Developers"—a statement is made which must be an oversight. It is to the effect that ferrous oxalate can only be used with gelatine plates; is not suitable for collodion dry plates. Now, unless our memory is playing us tricks, it was first used for the development of collodio-bromide emulsion plates.

In recommending pyro in preference to oxalate for gelatine plates, Mr. Wallace is in accord with the general sentiment of experienced workers.

In the chapter on "Wet Collodion" we think too much acid is recommended to be added to the negative bath. With most good samples of silver the bath can be worked without any addition of acid, provided it be well sunned before use, and we are of the opinion that the nearer neutral it can be kept the better.

On page 83 we read as follows: "Ruby colored light is used by the manufacturers and in most dark-rooms, but the plates may safely be developed by light of a deep orange hue, which is less trying to the eyes than red; *not light canary yellow or straw color.*" The Italics are in the original. It is fair to presume this was written before the recent discussions in this country and England on the subject of dark-room illumination.

We cannot endorse our author's recommendation of agate ironware trays; they cost about as much as glass or porcelain, and, although it is true they will not so readily break, yet, aside from this, they are not nearly so durable.

It seems to us that the quantity of hypo recommended to be added to the oxalate developer as an accelerator would be sufficient to produce a general fog.

Mr. Wallace informs us that if gelatine plates are used for lantern transparencies, slow plates must be used, and that they should be developed with oxalate. While admitting the superiority in a general way of both slow plates and oxalate development for this purpose, we may mention that some of the best slides shown at the recent amateur exhibition in this city were made on plates which, while not of exceptional rapidity, were fully equal in that respect to the average of plates sold as "rapid" by the best makers, and were developed with pyro, according to Cramer's formula of about a year ago.

The literary style of the work, as might be expected from its author, is unexceptionable, while it is handsomely printed and bound, and illustrated by a silver print from a negative of a charming landscape subject, whether on a wet or dry plate is not stated, and it is another commendable feature of this little book that the illustration is not used as a means of "puffing" anybody's plates, paper, or apparatus.

We are so accustomed to read something like this: "Our illustration is printed on Crow & Cackle's celebrated double-decomposed ostrich-egg paper, from a negative on Lyfast & Blowhard's chain-lightning plates, made with one of our *cheap, but good* $5 outfits, by a blind cripple having no previous knowledge of photography"—that its absence in this case is quite refreshing.

In conclusion we heartily commend this volume to such of our readers as are about commencing their photographic career.

Books Received.

A SKETCH OF DICKINSON COLLEGE, CARLISLE, PA., including a more particular account of the Scientific Department. By CHARLES F. HIMES, Ph. D., Professor of Natural Science. Illustrated with two full page engravings and five photographs. HARRISBURG: Lane S. Hart

THE STEREOSCOPE: ITS THEORY, HISTORY AND CONSTRUCTION; with contributions to the subject of binocular vision and suggestions as to the use and selection of a stereoscope. By Prof. CHARLES F. HIMES, Ph. D., Dickinson College, Carlisle, Pa. Illustrated with twelve woodcuts. Carlisle: Published by the author.

THE STEREOGRAPH BOOK; adapted to the complete preservation and convenient arrangement of the pictures in the most compact form. By the same author. PHILADELPHIA: Benerman & Wilson.

PICTURE MAKING BY PHOTOGRAPHY. By H. P. ROBINSON. LONDON: Piper & Carter. NEW YORK: Scovill Mfg. Co.

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ENGINEERING PHOTOGRAPHY.*

BY D. C. HUMPHREYS, C. E.

In discussing photography this evening, I wish what I have to say to be taken rather as a progress report than as the dictum of an expert, which I certainly do not claim to be, my own knowledge of the subject having been gained chiefly during the last six months in the leisure moments I have had at my disposal, while actively engaged in my regular work. Having so recently passed through the primary department, I suppose I can give good advice to the beginner.

The object which I have in view this evening is to give the principles on which the art depends with some of the chief uses to which it can be applied, which, I hope, will be instructive or interesting to all, and at the same time to give such practical suggestions and formulæ as will be of value to any one who desires to learn to take photographs.

My own knowledge on the subject has been gotten from books, experiments, and talks with other amateurs, having learned but little from the regular profession, who, to a greater or less extent, regard it as a secret trade where all information should be paid for. A beginner would probably save time and money by taking a few lessons in a good photographic establishment. That you may understand the change brought about by the introduction of the gelatino-bromide dry plates, which have only been on the market for a few years, some statement of the principles on which photography depends is necessary.

No engineer who has been successively tanned and bleached by field and office work need be told of the power of the sun to greatly modify the color of many substances. The salts of silver are those mostly used, being the only ones known to be capable of use in the camera, while the compounds of iron and chromium are extensively used in sun printing. Silver chloride, iodide and bromide are the salts used, the action of light being nearly the same on each. If light is allowed to fall on the chloride under favorable conditions it is reduced to the subchloride. As is well known, it is the short vibrations of light which so synchronize with the vibrations of the molecules as to throw off one atom of chlorine, while the longer vibrations have no effect. The opposite of this occurs when light falls on the eye, so a photographer, by using blue glass and blue curtains, can admit most of the chemical rays into his studio while excluding much of the heat and blinding light, thus enabling his subject to keep cool and to have his eyes wide open. The chemical change is very slight in the silver salt, so that very little energy is necessary, the result depending solely on the vibrations being of the right length, just as the trotting dog may have thrown down a bridge which allowed a four horse wagon to safely pass over it. Capt. Abney states that chloride of silver may be heated to that point at which it will itself give off chemical rays without being decomposed. The action of light on silver chloride is as follows:

$$2\,AgCl = Ag_2Cl + Cl,$$

this change takes place much more readily if some substance is present to absorb the chlorine. In the presence of moisture we have

$$4AgCl + H_2O = 2Ag_2Cl + HCl + HClO.$$

If silver iodide be used in the presence of free silver nitrate, as in the wet plate process, we have

$$12AgI + 6AgNO_3 + 3H_2O = 6Ag_2I + O + 6AgI + 6HNO_3,$$

the nitrate, being capable of absorbing the freed iodine, is called a sensitizer. If silver bromide had been used in the above reaction, on account of its greater sensitiveness to light, the following reaction takes place after exposure,

$$4Ag_2Br + 6HNO_3 = 4AgBr + 4AgNO_3 + N_2O_3 + 3H_2O,$$

which, with the aid of the nitrous acid set free, soon destroys the latent image. This accounts for the disappearance of the latent image in the so called tannin dry plates when they are kept after exposure before developing.

With the gelatino-bromide plate the case is quite different, the gelatine acts as a sensitizer, absorbing the liberated bromine without setting free any injurious acid, so that such a plate will keep as well after as before exposure, which seems to be indefinitely if properly made and not allowed to get too hot.

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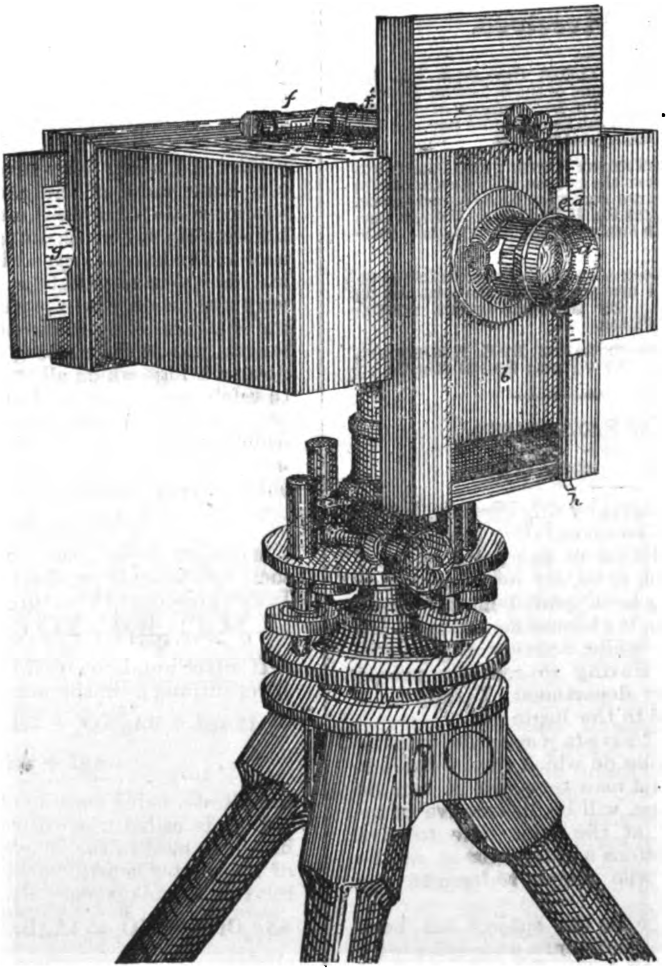
*Read before the Engineers' Club of St. Louis, March 26, 1884.

Some manufacturers claim that the plates, like whisky, improve with age. They probably become more sensitive on account of an increase in the size of the grains of bromide This property of the gelatino-bromide plates, taken in connection with the fact that they are the most sensitive compound known, make them so superior to all others for engineering purposes that I do not consider it worth while to mention any others, referring you to books on the subject.

SURVEYING CAMERA.



THE LENS.

The lens is the most important thing in the outfit, and while the character of this paper does not admit of a full discussion, a few remarks may not be out of place.

Makers should, and usually do, state in describing a lens the size of the objective, the equivalent focal length and the size of the plate covered. Lenses are usually compounded to overcome spherical aberration and other obstacles to making a correct picture, and the equivalent focal length is the distance from the optical centre of a compound lens to the ground glass, when the rays striking the objective are parallel. The following equation gives the relation between the conjugate foci of a lens:

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{u}.$$

Where v is the distance from the optical centre to the image, u the distance to the object, and f the equivalent focal length, it is evident that if u is infinite $v = f$. If the image is to be $\frac{1}{n}$ the size of the object we have:

$$\frac{1}{v} = \frac{1}{f} - \frac{1}{nv} \text{ or } v = \frac{f(n+1)}{n}.$$

The quickness of a lens depends on the size of the objective and the shortness of the equivalent focal length. If r is the radius of the lens and

f the focal length, then the time of exposure is given by the equation:

$$t = C\frac{r^2}{f}$$

where C is independent of the lens, depending on the value of the light and the quickness of the plates. By means of this equation the quickness of the different lenses can be readily compared.

The standard lenses are those made by Morrison, Voigtländer, Darlot or Dallmeyer, each of whom makes excellent lenses. The Morrison is an American lens, while the others are not. In 1840 Voigtländer & Son made the first successful portrait lens ever constructed; they have ever since acknowledged no superior, and their euryscope seems to be the favorite lens in America to-day.

For an engineer, especially if he be economically inclined, I recommend to cover a 5×8 plate, Darlot's Rapid Hemispherical No. 1. $15. When used whthout a diaphragm, or "stop," it does not quite cover the plate uniformly, but with one of the smaller stops, does so perfectly. It is a quick lens, and embraces an angle of about 65 degrees.

Morrison's Wide Angle View Lens, No. 4, $25, is an excellent lens, especially for work in confined situations, as in photographing street scenes, machinery, etc.

I have an euryscope, No. 2, $52, which works well and will cover an 8×10 plate if need be. It is not so well worth $52 as my Darlot is worth $15.

Morrison's New Rapid Copying Lens, $40, covering a 5×8 plate, is probably as good as any.

THE CAMERA BOX.

The camera box which I have is made by Anthony, and is called "The Novel." I selected it after looking at all I could see in the St. Louis supply stores, and taking its cheapness into consideration, it is probably as well suited to an engineer as any. The important points are that the plate can be used with its longest dimension either vertical or horizontal, that it can be turned about a horizontal axis so as to make the plane of the picture vertical when the camera is pointed up or down, and that the lens should be capable of being moved vertically.

The tripod should be light and portable, folding up so that it can be easily carried.

DRY PLATE HOLDERS.

Of these there are a great variety, but by far the most convenient for an engineer are the paper holders which add very little either in bulk or weight, making them suitable for field work. They are patented, not very well made, and sold high, because one cannot get along well without them.

TIME OF EXPOSURE.

The question of how long to make the exposure is the most difficult one connected with photography, since it depends on so many things, such as the lens, the diaphragm, the quantity and quality of the light and the color of the object. The time varies from the instantaneous, when the object is white and in bright sunlight, to hours in enlarging or in photographing microscopic objects.

To give a beginner some idea; if he wishes to photograph a landscape with a Darlot lens, medium size stop, and in bright sunlight, two seconds will suffice, while I have never succeeded in taking a portrait in an ordinary room with less than thirty seconds exposure, when no stop is used. A good way is to expose different parts of the same plate unequally, then notice which exposure gives the best result. The only way to learn is by experiment; and after spoiling many plates the learner will know by intuition how long to keep the cap off. A professional hardly ever looks at his watch, though a beginner should not only observe the time, but record it also.

DEVELOPMENT.

In most processes, and especially in the gelatino-bromide, the latent image is practically invisible, necessitating the use of a developer, whose use depends on the fact that after one atom of silver is precipitated it attracts other atoms as they are thrown down.

The developer first attacks the sub-bromide, shaking off one atom of silver which aids in the precipitation of others, the bromine being absorbed by the developer. The reduction of the silver bromide which has not been effected by light probably takes place according to the formula:

$$Ag + AgBr = Ag_2Br.$$

The so-called iron developer is, all things considered undoubtedly the best for an engineer, on account of its cleanliness, convenience, and the control it gives in developing plates improperly exposed. The following is the one I use with much satisfaction:

Solution No. 1.	Neutral oxalate of potash	5 ounces.
	Bromide of ammonium	30 grains.
	Water	20 ounces.
Solution No. 2.	Protosulphate of iron	5 ounces.
	Tartaric acid	20 grains.
	Water	20 ounces.

To four parts of No. 1 add one part of No. 2; place the plate in the tray and dash the developer over it, wetting the whole plate as nearly simultaneously as possible. For a 5 × 8 plate use two ounces of No. 1 and four drachms of No. 2. To develop an instantaneously exposed plate increase the amount of iron to about five drachms, add a few drops of bromide of ammonium from a solution of ten grains to the ounce; dash the developer over the plate, and as soon as it is wet pour it off; add three drops hyposulphite of soda, then pour it back into the tray, after which the picture will come out very rapidly.

The Cramer developer is by many photographers considered the best, and for economy and the excellence of the negatives produced by its use is certainly a very good one. It stains the fingers, and small bubbles form readily in it, like soapsuds, which are liable to stick to the plate and cause spots. It is not so good for developing instantaneous work.

The following is the formula for preparing it:

Stock Solution.

Sulphite of soda (crystals)	3 ounces	troy	weight.
*Bromide of ammonium	¾ or 1 ounce	"	"
Bromide of potassium	1 ounce	"	"
Pyrogallic acid	2 ounces	"	"
Dissolve thoroughly in pure rain, distilled or ice water	32 fluid ounces.		
Add sulphuric acid, c. p.	120 minims.		
Concentrated liquid ammonia, 26° B. (sp. gr. 0.900)	3 fluid ounces.		

Add water to make up bulk to 40 ounces.

Dilute sufficient for one day's use in the proportion of one part stock solution to eleven parts of water. Use a rubber stopper for the stock solution.

FIXING.

After development the negative is washed and put into the fixing bath, which is prepared by dissolving one pound of hyposulphite of soda in a half gallon of water. In warm weather an addition of alum is beneficial. The hyposulphite dissolves the unaffected salts of silver. After fixing wash thoroughly.

Gelatine negatives frequently need intensifying, for which purpose I use England's mercuric intensifier:

Mercuric chloride	1 part.
Ammonic chloride	1 part.
Water	20 to 24 parts.

Pour the intensifier over the negative and rock the tray until the picture turns white; then wash thoroughly, after which put it in water containing a small quantity of ammonia, which turns it black.

As a rule for engineering purposes the negatives do not need either retouching or varnishing.

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*If you prefer intense negatives, use 1 ounce bromide of ammonium, but if you prefer soft negatives, ¾ ounce will be best, and will allow shorter exposures.

OUTFIT.

The articles which a beginner will need for taking photographs 5 × 8 are:

For Taking and Developing the Negative.

1 Darlot lens, No. 1	$15 00
1 Camera box	20.00
1 Tripod	2.50
1 Frame for paper holders	2.00
½ Dozen paper dry plate holders	2 50
1 Gossamer focusing cloth	1.00
1 Ruby lantern	2.75
3 Japanned iron trays, 5 × 8	.75
1 4-ounce measuring glass	.35
1 Nest of 3 beaker glasses, 2 to 4 ounces	.45
3 20-ounce glass bottles	.30
1 ½ gallon glass bottle	.15
2 4-ounce wide mouth glass bottles	.40
1 Glass stirring rod	.10
1 Glass funnel	.20
1 10-ounce bottle for intensifier	.10
2 Camel's hair brushes	.20
1 "Granite ware" wash-stand set	5.75
1 pound Neutral oxalate of potash	.50
1 pound Protosulphate of iron	.06
5 pounds Hyposulphite of soda	.25
1 dozen Dry plates	1.75
2 ounces Bichloride of mercury	.25
2 ounces Chloride of ammonium	.30
6 ounces Retouching varnish	.50
1 box Calcined flour (Bigelow's)	.35
Total	$58.46

Silver Printing.

1 Porcelain tray, 10x12	$1.20
1 Argentometer	.60
1 Thermometer	1.00
1 pair Scales	1.00
1 20-ounce Bottle, glass stopper, for silver bath	.25
1 16-ounce Bottle, for old toning bath	.10
1 1½-ounce Bottle, for chloride of gold	
1 Fuming box (any old box will do)	0.00
4 Printing frames	2.60
3 Trimming glasses, 3.8 × 6.1, 3.8 × 7.65 and 4.4 × 7.33	.40
2 Iron pans, "granite ware," for toning and fixing	.40
1 Glass funnel	.25
1 Flat brush, for pasting	.25
1 Sponge	.25
1 1-drachm Measuring glass	.25
2 ounces Nitrate of silver	1.70
1 dozen sheets Albumenized paper	.90
15 grains Chloride of gold	.60
½ pound Carbonate of soda	.06
1 pint stronger Ammonia water	.40
1 pint white Parlor paste	.35
½ dozen sheets Blotting paper	.40
¼ pound Absorbent cotton	.35
50 Cabinet mounts	.50
25 Panel mounts	.60
100 mounts, 5x8, cut to order	1.00
Total	$15.41
Add total for negatives	58.46
Total cost of outfit	$73.87

This is as cheap an outfit as I will recommend for satisfactory results on a 5×8 plate.

Not including the cost of my surveying camera I suppose I have spent over $200, which includes a $52 lens and material for sundry experiments.

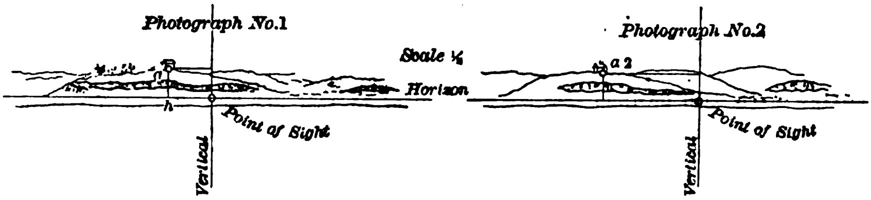
APPLICATIONS.

The following are some of the uses to which the art can be put by an engineer:

In visiting engineering works, completed or under construction, much has frequently to be learned in a short time. A few photographs of the general plan, interesting details and machinery used in construction, showing methods of doing work, would be of incalculable value. The advantage in an engineer's being able to take the views himself instead of buying them consists in his being able to get just what he wants without being bothered with that which can be of no value to him. Besides, it will frequently happen that there is no professional photographer near.

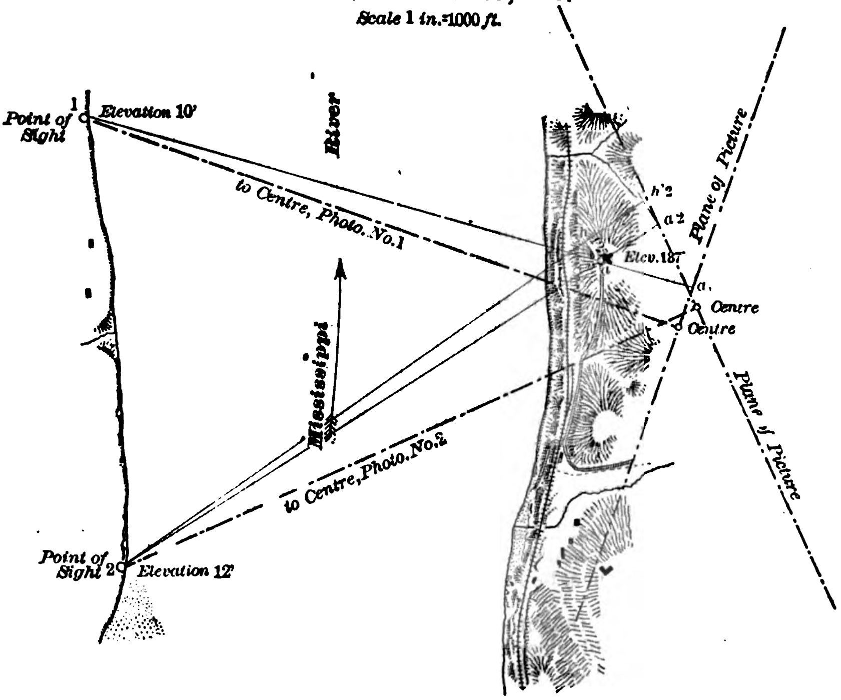
If an engineer is in charge of construction and wishes to report progress either to a chief or board of directors, a photograph is the most accurate and trustworthy method of showing the exact condition of the work. In this case a boy could easily be taught to do the drudgery connected with developing and printing.

In case of accident to railway property, such as a washout or landslide, a wreck caused by collision, fallen bridge, tornado, earthquake or otherwise, a photograph is the quickest way of reporting the extent of damage and condition of the wreck.



MAP, BUSHBERG, MO.

Scale 1 in.=1000 ft.



N. B. The distance a h (125') is the elevation of the point a above station 2.

Drawings can be quickly photographed and reduced in this manner to a small scale, and made of uniform size, so that they will occupy but little room and still all the details be sufficiently well preserved to make working drawings from them if necessary. These photographs are also exceedingly convenient for an engineer who is superintending the building of machinery, saving him the bother of carrying a large drawing.

Blue prints can, of course, be made from negatives as readily as from tracings, and for many purposes are preferable to silver prints.

If a blue print be made of a machine or other object, and a pen and ink drawing be made on top of it, the blue may be afterward washed out or destroyed by immersing the picture in a saturated solution of bicarbonate of soda, which in about a minute causes the blue to disappear, leaving only the black ink lines on a white ground. Wash it carefully in water and dry; after which it may be photo-engraved and set up with ordinary type in printing a catalogue, or elsewhere. The best ink I have ever found for the purpose is "Higgins' American Drawing Ink" ("waterproof"). The Moss Engraving Company, of New York, use silver prints and wash out with cyanide of potassium, which is obviously inferior to the above method, which I have never seen described, and it may be new.

If autolithographic ink be used instead of Higgins,' the drawing can be transferred immediately to the stone without washing out the blue. The accompanying view of my surveying camera was made in this way. For this work paper prepared for autolithography should be used.

A negative can be taken from a tracing or drawing on thin paper directly by contact instead of by using the camera, prints taken from it giving black lines on a white ground in silver printing, or blue lines on a white ground in blue printing. For a large drawing the negative and chemicals for developing would be expensive.

SURVEYING WITH THE CAMERA.

This being a strictly engineering use of photography, and having been but little used, if at all, in this country, and not much anywhere, is perhaps the most interesting to those present or who will read this paper. I will, therefore, now give a description of the surveying camera which I have had made for experimental work next summer, in connection with the United States survey of the Missouri River; also the general principles and method of application, reserving the details for another paper, which, if you desire it, I will read at some future time, when I hope to know more about the subject.

In this work the dry plate must of course exactly take the place of the ground glass used in focusing, both of which are in the plane of the picture. It is obvious this plane must be made accurately vertical, so that all vertical lines may appear so in the photograph, and that all objects may be projected on the horizon by parallel lines. That the horizon may be accurately determined, some line, as the one through the center of the ground glass, must be capable of being made truly horizontal. To accomplish both these ends the small levels, shown at f and f^1 in Fig. 2, are placed on top of the camera box, the one being horizontal and parallel to the ground glass, the other perpendicular to it. The back of the box must be rigid and the focusing done by moving the lens, which is easily accomplished, since for distant objects but little change is necessary. The dry plates should, on the score of economy and convenience, be long and narrow, those I use being $2\frac{1}{2} \times 8$.

The lens should be so fixed that it can be moved up or down, for taking bluffs or mountains above the point of sight, or valleys below it.

To accomplish this the lens *a* is attached to a slide *b*, moving vertically. A clamp screw is shown at *c*. The slide carries a vernier *e* which in connection with the fixed scale *d* shows how far the lens has been moved. The zero of the scale is determined by bringing the lens to the point where objects in the horizon are projected on the horizontal line through the center of the ground glass. The slide *b* is held against the front of the camera box by brass springs, one of which is under the clamp *c* and the end of another is shown at *h*. The ground glass for focusing is shown at *g*, partly withdrawn.

The distance from the optical center of the lens to the ground glass is accurately determined by measuring a base line in front of the camera, measuring the distance to the base line, and the length of the image or distance between the extremities as shown on the ground glass. Any change in the focal distance is measured by a scale on the side of the lens, not shown in the drawing. One of the smaller stops should be used to sharpen up the picture.

If photographs be taken with the surveying camera from two known stations, and the direction of the point of sight be measured with transit or by means of a compass attached to the camera, the position of each object which can be seen in two pictures can be determined on the map both horizontally and vertically. The method of placing the photographs in position and locating objects is, I think, so well shown in the accompanying map that it need not be described here.

The map is part of an experimental survey I have just made at Bushberg, twenty-five miles below St. Louis, on the Mississippi River. The draughtsman should work directly from negatives on account of the greater accuracy and distinctness of detail. The accuracy of the gelatine film on glass is so great that Dr. Eder was not able to discover any change, from developing and fixing, although by the method used he could have detected a variation of 1–6000 in the distance.

By this method of surveying the plane table is virtually brought into the office, and the topographer is at both stations simultaneously, without being bothered by sun or wind.

The chief difficulty arises from aerial perspective, or the fact that distant objects appear as masses, it being hard to distinguish details. The photograph should therefore be taken when the air has little smoke or haze in it, and if possible, when the sun shines on the back of the instrument. For nearly inaccessible mountain regions, where the air is so clear that distant objects appear very close, I think the surveying camera will be invaluable. Its peculiar adaptation to military purposes, where it is important to reduce the time of the field work, need not be pointed out.

Besides the above use of photography there are many critical moments arising in engineering practice, as where Capt. Abney, corps of Royal Engineers, tested the value of torpedoes by instantaneously photographing the column of water thrown up by the explosion.

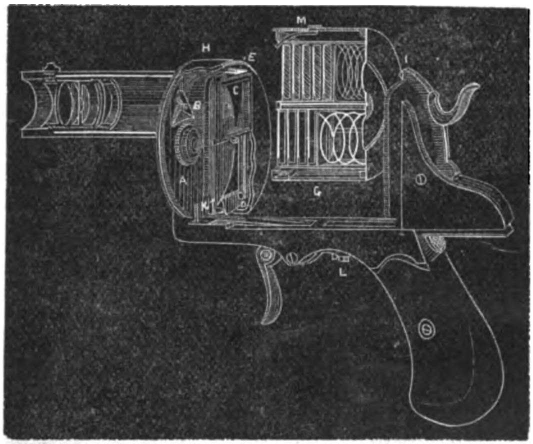
A PHOTOGRAPHIC REVOLVER.

The apparatus which we are about to describe, and which is manufactured by M. E. Enjalbert, is very ingenious, very well conceived, and will, we believe, meet with great success. It is a true pocket revolver with barrel, stock and cock, but instead of serving to throw deadly leaden balls it is designed for taking very small photographic negatives two centimetres square. Upon pulling the trigger the sensitized plates succeed one another, and the operator can thus take ten photographs in rapid succession without touching his weapon. These small photographs may be afterward enlarged, and serve as useful documents for tourists, amateurs and artists.

With this little revolver there is no longer any focusing to be done, no more plates to be changed, and instantaneous views are obtained by an exposure of one-fiftieth of a second. The apparatus is always hermetically closed to the light, and it permits of following objects in motion with great facility, and without its being necessary to take accurate aim as with an ordinary revolver, since it is merely a question of taking such a general view as is comprised within the field of the objective.

The apparatus consists of five principal parts, which are shown in detail in the annexed figure.

1. *The Barrel.*—In this is adjusted the rapid rectilinear objective, which consists of two achromatic menisci that are symmetrically arranged to give a focal distance of 0.042 m. The revolver may be used from a distance of 4.5 metres, since, owing to the combination of the lenses' curves, the different planes are then all in focus. The ever tedious operation of focusing is thus avoided. The diaphragms accompanying the apparatus are placed in the interior of the objective, between the two lenses.



2. *The Camera.*—This consists of a cylinder, H, that contains a shutter, A, and a frame holder, C. It is into the front end of this chamber that the barrel is screwed. The shutter, A, is capable of revolving freely upon its axis. It contains an aperture, B, equal to a quarter of its surface, and carries a small clock-work movement that gears with the pinion of the axis of the camera. This clock-work movement, when its spring expands during its revolution, necessarily carries along the shutter. The spring is wound up by revolving the cylinder, G, when it is in place. At this moment, in fact, it catches and holds the end of the axle, which enters a square aperture in its center. Upon pulling the trigger the two teeth seen at K are thrust forward. The first of these, which, when at rest, stops the shutter, now frees it and allows it to make one revolution that opens and instantaneously closes the apparatus. The shutter, on reaching the lower end of its travel, abuts against the second tooth. The shuttle-motion that occurs in the rear when the trigger is freed disengages this second tooth, and allows the first to engage with the starting notch again, so that the shutter is then ready to operate anew if the spring is sufficiently taut.

The frame holder, C, is hinged beneath, at D, and terminates above in a bent tooth, E, which causes it to advance or recoil a distance equal to the thickness of one of the frames, according as it has in front of it the upper or lower case. This motion is obtained by means of the rabbet, F, at the bottom of the cylinder.

3. *The Plate Cylinder.*—This is divided into two rectangular compartments in which slide two plates that are thrust forward by spiral springs. The upper case contains the sensitized plates held in their frames while the lower one collects them as fast as they have been exposed.

The cylinder, G, revolves through the friction of its edges against the chamber, H.

When the upper case is opposite the aperture, C, the tooth, E, forces back the frame holder, the first frame enters the open space in front of it, and the glass is thus in place for the operation. In order to remove this glass and substitute the succeeding one for it, the cylinder is made to perform one entire revolution. The first glass remains in the aperture, C, in the camera, when the cylinder begins to revolve. Then, the revolution continuing, when the second compartment comes opposite this glass, the tooth, E, enters the rabbet, F, and the glass naturally enters the said compartment. The revolution still continuing, the cylinder takes its position again, and the second glass, now become the first, is, in its turn, made to enter the camera.

4. *The Movable Breech,* which is fixed upon the stock by a dovetail, serves to shove the cylinder, G, up against the camera H. It carries a spring cock, whose extremity, I, enters a recess in the back of the cylinder and prevents the latter from revolving, and also indicates the position of the cases when they are well opposite the objective.

5. *The Stock* connects the different parts of the apparatus with each other. The trigger actuates a lever that passes under the cylinder, G, and that terminates, as before stated, in two teeth, K. The small turn button, L, beneath the trigger serves as a catch.

The manipulation of the apparatus is simple, and may be sufficiently understood from the foregoing description without further dwelling upon it.—*La Nature.*

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According to the *Journal de Liege,* the forgery of bank notes goes on as merrily as ever, one clever set of operators being in a position to split into two, new notes that have never been folded. Blue ink which was adopted by reason of the difficulty involved in reproducing it by photography, is not now relied on so much by bankers abroad; some of them have recently taken another means of defeating the photographic forger. This is no other than the employment of an invisible actinic ink, of which no trace can be seen on the bank paper nor upon the image on the focussing screen. As soon, however, as you come to develop your plate bearing a reproduction of the bank note, the word "forgery" appears in bold letters right across the negative.—*Photo. News.*

APPARATUS FOR ENLARGING MISCROSCOPIC SLIDES.

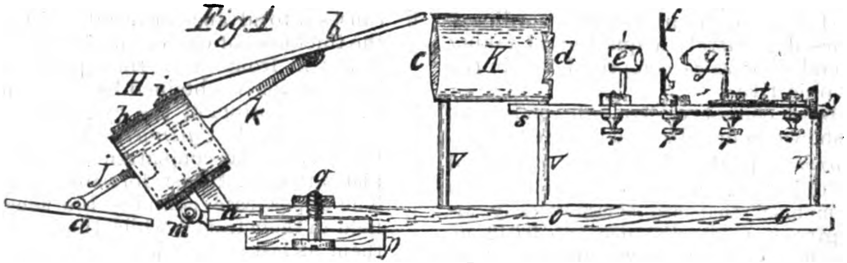
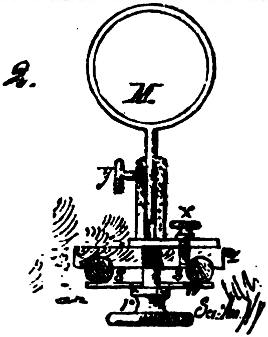


Fig. 2.



In the *Scientific American* for February 16, under the title of "An Electric Microscope," I noticé that the apparatus there mentioned for exhibiting magnified views of miscroscopic objects is spoken of as attracting no little attention. Some time since I constructed an instrument with which I have successfully accomplished the same object. In magnifying power I have equaled and even excelled the power mentioned in the article referred to above. For instance, a piece of a fly's eye less than one-sixteenth inch in diameter was exhibited in a bright and well defined picture, 10 feet in diameter. This could have been enlarged very much without impairing the distinctness of the view had space permitted. A bee sting was made to appear more than 20 feet long. The cells of wood were especially attractive, those of pine appearing from 1½ to 2½ inches in diameter. These objects, with about seventy-five more, were exhibited to my school. I have made use of both the calcium light and the electric light, but in the instrument here described sunlight was used.

Fig. 1 is a sectional view of the instrument, which, so far as I know is different trom any plan, heretofore adopted. The optical parts are two reflectors, *a* and *b* supported on two arms each, *j* and *k*, and swinging at the points, *a* and *b*, a convex lens, *c*, a concave lens, *d*, a small condenser, *e*, and the object glass, *g*. The mounted object is placed across the opening in *f*, over which an adjustable diaphragm works, not shown in the figure.

H consists of three tubes, the inner and longest one being rigidly attached to *n*, and placed at an angle to *n o o* equal to the latitude of the place. The tube or ring, *h*, to which the supports, *j*, are attached, revolves about the inner tube by means of a rack and worm screw, *m*, which is turned either by hand or clockwork. By this the reflector, *a*, is made to follow the sun. The ring, *i*, to which the supports, *k*, are attached, may also be turned around the inner tube by hand.

The parts, *e f g*, are supported upon and slid along two rods, *s s*, and are clamped in any position by the screws, *r r r r*; *t* is a screw for fine adjustment of *g*.

The parts, *n o o*, are of wood, 4 inches by ¾ inch, and 22 inches long. They can be turned about the joint, *g*, which is immediately below the center of the reflector, *b*. The piece, *p*, extends 2 inches beyond either side of *n o*, and is screwed fast to a window sill when in use. The three pieces, *p n o*, all turn independently.

The instrument is used as follows: Attach it by the piece, *p*, to a window on the east, south, or west side of a room where sunlight can be reached. Now turn *n* so that the line, *a b*, points toward the pole star or approximately north and south. Then turn *o o* to point toward the place where the picture is to be shown. The ring, *i*, and reflector, *b*, are next so adjusted that the light is thrown through *c d e g*. After that the only movement required is accomplished by the screw, *m*. Of course the reflector, *a*, must be adjusted to reflect the light through H, parallel to a line, *a b*, but this can be done once and clamped, after which no change is necessary, whatever be the position of the instrument.

Fig 2 gives a larger view of the part, *e r*, which is almost like *g r*; *s s* are the rods on which a grooved piece, *z*, slides and is clamped by the piece, *w*, and screw, *r*. The lens, *m*, is adjusted in height by the screw, *y*, and sideways by the screw, *z*.—*Reynold Janney in Scientific American.*

DR. VOGEL'S EOSINE PROCESS.

BY DR. H. W. VOGEL.*

In the paper already published I have thoroughly described the method of working with the color collodion, and now add some observations which are the result of my more recent experiences.

1. From 2 to 3 per cent of alcohol should be added to the silver bath, No. 1 (see page 22).

2. When the yellow glass is not used, it suffices to give double the exposure which would be required if an ordinary iodized collodion were employed.

3. When the yellow glass is used, the exposure may be estimated at about five times what would be required in the case of ordinary work on iodized collodion.

4. As eosine is alkaline, and not only neutralizes the silver bath, but may occasion further mischief by its decomposition, both baths should be tested before use as follows:—A drop of a solution of potassium permanganate containing one part of the salt to fifty of water is added to the nitrate solution, and if the rose color disappears immediately, a second drop is added, and so on until the tint remains for the period of one minute. After this the solution is tested with litmus paper, and is, if necessary, made slightly acid; acetic acid being used for bath No. 1, and nitric acid for bath No. 2.

Baths which, in the hands of my pupils, gave comets and stains, were quickly restored to a good working condition by being treated with permanganate of potassium, as above described.

When, however, organic compounds have accumulated in the bath, it is not sufficient to treat it in the cold with permanganate of potassium, and it is necessary to heat the solution to the boiling point in a porcelain dish, and treat it gradually with permanganate solution, as already described. When the rose color remains for half a minute, the solution is filtered and treated as before. Permanganic acid is to be preferred to the potassium salt, but its use naturally requires spirit, skill and care.

The grain of the paper in copying.—It is a very remarkable fact that the grain of the paper shows very much less when a negative is produced by the new method, than when made by the usual process on iodized collodion, and this circumstance has been so often proved by my own experiments, and by those of my pupils, as to be beyond doubt. It may be that the shadows of the grain are mainly lighted by the yellowish reflections from the studio, and the yellowish light counts far more in the new process than in the old.

The next problem was to make the eosine silver compound available in the gelatine process, and for this purpose four cubic centimeters of eosine solution containing 1 in 400 were precipitated with 2 drops of a ten per cent. solution of silver nitrate, and the precipitate was dissolved in 2 drops of ammonia; when 4 drops of this solution were added to 10 cubic centimetres of gelatine emulsion, a notable increase in the sensitiveness for the yellow was noticed; indeed, tenfold the increase noticed when a mere addition of eosine with ammonia was made.

In conclusion, it may be remarked that the region of activity resulting from the use of eosine in photographic plates does not correspond exactly with the absorption spectrum of an alcoholic solution of the dye, but tends more toward the yellow. This fact will not surprise the experienced spectroscopist, who knows that through the action of highly refracting media a shifting toward the red occurs. Eosine, besides giving an intense absorption line in the greenish-yellow, gives also a fainter one in the bluish-yellow; but the influence of the latter is most notable when methyl eosine is used.—*Photographic News.*

Mechanical Appliances.

ANTHONY'S ENLARGING CAMERA.

We published in our last issue the abstract of the patent specification relating to the above apparatus. It will be seen that, whatever may be the faults of this document, excessive modesty in the claims made is certainly not one of them. In fact we are inclined to wonder that, having gone so far, the patentees should not have taken a step farther, and patented the *principle* of enlarging by artificial light. For if every claim made in this specification were sustained, we hardly see how any one could apply this principle at all without infringing some of them. Let us take them *seriatim.*

Claim 1 is for "the camera box having a lamp and reflector chamber in its rear end, constructed with a series of grooves at or near its forward end, adapted for the reception and adjustment of the condensing and picture slides, and an opening to the grooves to facilitate the adjustment of the slides, said opening being closed by a cover or door."

So far, all right, as we understand this to mean the *combination* of the lamp chamber and grooves; as to the cover, that as well as the grooves has been used in copying cameras for daylight work so long that the memory of man runneth not to the contrary.

Claim 2 is for the *combination* of the grooved box with the condenser slide and negative slide, and the bellows front for carrying the objective. This we admit to be a perfectly legitimate subject for a patent, at least we do not know of any such combination having been previously used.

Claim 3 is for "the slides, provided with holding springs at their sides, in combination with the grooves." If this is a novelty, where shall we find anything old?

Claim 4 is so good we must repeat it verbatim. "In an enlarging camera the box A, having a series of interior slideways in its front end portion, a lid or door for insertion and removal of a lamp and reflector, g, within and from its rear portion, one or more air-feeding inlets in its bottom, and a chimney in its top, over the place occupied by the lamp."

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* Additional Remarks to a previous paper, page 6.

The only tenable claim here is already included in No. 1, which, as we have seen, covers the combination of the grooves and lamp chamber. As to anything beyond this, it will be evident when we consider that any "magic lantern" is necessarily an enlarging camera, that every user of that time-honored optical contrivance is an infringer of this patent. Our readers will perceive that this "grasping monopoly" has even laid its iron hand on the air-holes in the bottom, thereby putting out our light for want of air! But let them not be discouraged; they can still make air holes in the sides, or carry air tubes down from the top. Nor may they put a chimney over the lamp; but it is presumed that a chimney may be placed at another part of the box, and a flue made to conduct the products of combustion to it.

How we are to get along without a door for the insertion and removal of the lamp, however, is not quite so apparent. Oh! yes; we can make a large aperture in the bottom of the box, and fit a loose piece air tight in this hole, said loose piece to have the lamp attached to it, then we can lift the box off the lamp, instead of sliding the lamp out of the box. Of course, this opening must be air-tight, or we shall be infringing the patent on the air inlets.

But it occurs to us that a cloth might be thrown over the opening for the lamp, in rear end of box, and this would hardly come under the definition of a "lid or door." Let us be thankful they did not say cover!

Claim 5 covers the combination of the grooved box with the lamp and reflector in the rear portion, and a front lens in close adjustable connection with the forward end. At first glance, this looks formidable, as though they were not going to let ususe either a front lens or a lamp at all; but on closer inspection it will beseen that it only covers the grooves, already provided for in claims 1 and 4.

Claim 6 is for the non-actinic glass in one or both sides of the lamp chamber. As "prior user" will invalidate any patent, we need only state that we have witnesses to prove that we have used this arrangement for nearly three years, and certainly had no idea that we had brought out anything original.

Sifted down, the only points of novelty about this apparatus are:

1. Having grooves inside the box, for the reception of the negative slide;
2. Attaching the condenser to a loose slide, and providing similar grooves for its reception;

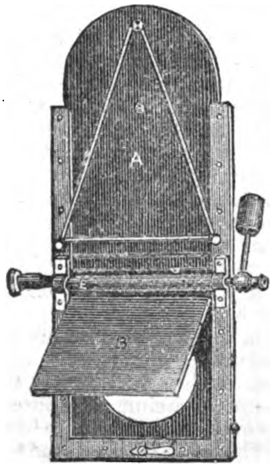
(The combined effect of these two features being to allow the relative distance between the lamp, the condenser and the negative to be varied with facility.)

3. The connecting of the object glass to the box by a bellows.

So much for the patent claims; as to the merits and defects of the apparatus itself, we propose to say something in our next, provided always that we do not in the meantime find a resting place in Messrs. Anthony's private burial ground —"in the country."

THE PHŒNIX SHUTTER.

In our article on "Instantaneous Shutters," a month ago, we expressed a conviction that for moderately rapid exposures, a modification of the old "flap" would be about as near perfect in action as any instantaneous shutter could be. At that time we were not aware of the existence of any commercial shutter (designed for instantaneous exposures) involving the principle of the "flap," but since our article was written we have seen a cut (reproduced below) of a shutter made by Reynolds & Branson, of Leeds, England, and called the "Phœnix." It has been in the market for over a year, but has recently been improved, and our illustration shows its latest form. As will be seen at a glance, it combines the flap and drop. The flap is held closed by a spring catch shown at the bottom of the frame, and the drop is held open by a projection on the axis of the flap, which releases it just before the latter reaches its highest position. The drop can be operated by gravity alone, or by a rubber band, as shown in the cut, while an arrangement is provided by means of which it is, when desired, fastened in its elevated position and the exposure made by means of the flap alone, the latter being in this case worked by hand through the medium of the milled head shown on the left end of spindle. In this way, of course, an exposure of any duration can be given. When used instantaneously, the flap is raised by means of the weighted balance arm on the right, this arm being adjustable for length so as to allow of considerable variation in length of exposure—we believe from about one-quarter second to as short as one-fortieth second, when a strong rubber band is used on the drop. It must be understood that the rubber band on the drop not only increases the rapidity of descent of the latter, but also, (by pressing on the projection on its axis,) the velocity of ascent of the flap also. While this shutter is not quite so simple, nor so cheap to manufacture, as a simple drop, it is equally simple in action, and the fact that it gives the longest exposure to that part of the object which nearly always requires it, will commend it to many.



AN EXPERIMENT TO PROVE THAT THE APPARENT TIME IN THE ELECTRIC DISCHARGE IS AN OPTICAL ILLUSION.

BY P. ATKINSON, A. M.

The carriers on the revolving plate of a Töpler machine afford special facilities for this experiment. They are usually six discs, arranged in a circle, and present the appearance of a continuous bright ring when the machine is operated in the light; but when operated in the dark, they are seen only when the spark renders them visible; and, instead of the bright ring, each appears by itself, apparently motionless, and as perfect in form as if really so, just as if the movement of the plate were momentarily arrested during the passage of the spark.

This apparent time of the spark may be estimated at $\frac{1}{4}$ second; but if the carriers were really visible during that time, the ring-like appearance would be unavoidable, as will appear from the following calculation:

Suppose the revolving plate to have an average speed of $4\frac{2}{3}$ revolutions per second, it is evident that each carrier would make a complete revolution in less than $\frac{1}{4}$ second, so that if that were the actual duration of the spark, each would be continuously visible round the entire circle, and hence even a single carrier would produce the bright ring. But it is only necessary to this result that each should be visible until it takes the place of its predecessor—that is during its passage of 1-6 of the circle, which reduces the time to 1-28 second.

But if they were visible even half that time, 1-56 second, and each were $1\frac{1}{2}$ inches in diameter, and their distance, from center to center, $5\frac{1}{2}$ inches, we would have 6 ellipses, each having a length nearly twice its breadth.

From this it is evident that the smallest conceivable duration of spark must produce an ellipse; but as each presents the appearance of a circle, with no tendency to elliptical form, the conclusion is inevitable that the apparent duration of the spark is an optical illusion, and that its time, if any, is so nearly zero, that it cannot be estimated.

We must conclude, then, that at the instant of discharge the image of the carrier is photographed on the retina of the eye, and at the next instant darkness supervenes; but the sensation on the retina has a momentary duration, during which the carrier appears stationary, while in reality it may have passed entirely round the circle.

It is important to notice in this connection, that the appearance and disappearance of the carriers depends on the rapidity of the discharge; and when the spark is made so short and rapid as to be apparently continuous, the carriers appear and dissappear with each snap, like a succession of views in a rapidly moving panorama, proving that the apparently continuous spark is a succession of sparks so rapid as to give the impression of continuity.

As a flash of lightning is only the same thing on a grander scale in nature's own laboratory, we must conclude that the passage of electricity from cloud to cloud, a distance often of many miles, is so rapid as to defy human calculation. We notice this in chain lightning, when the flash, sometimes three to five miles long, is seen throughout its entire length at the same instant, as if suddenly photographed on the cloud.—*The Electrician and Electrical Engineer.*

Legal Intelligenc

LILIENTHAL'S LAMBERTYPE

JUDGE PARDEE RENDERS A DECISION FAVORABLE TO LILIENTHAL IN THE CELEBRATED PHOTOGRAPH SUIT

In the United States District Court, Judge Pardee has just rendered a decision in the case of Theo. Lilienthal vs. W. W. Washburne, in favor of Lilienthal. Suit was brought by Lilienthal in this case against Washburne, as far back as 1879, for infringement on his patent of the Lambertype process, the patent for which Lilienthal possessed for the States of Louisiana and Mississippi. Lilienthal claimed that Washburne would not buy a license to use this patent, but had gone into a conspiracy with Moses, the photographer to whom he (Lilienthal) had sold a license, in order to use the license with Moses, thereupon suit was brought.

In the prosecution of the case a number of new issues arose, which delayed its final settlement to this time. In the decree just rendered Judge Pardee orders that Theo. Lilienthal recover from W. W. Washburne $2700, and interest thereon, at the rate of 5 per cent per annum from the date of the issuance of this decree. Also, that Special Master in Chancery A. G. Brice, recover the sum of $1000.97. Lilienthal also to recover all costs and taxable charges when announced. Ordered, further, that $3341.90, the amount collected by Washburne from the manufacture and sale of the Lambertypes, subsequently to the service of an injunction in this case, which money was paid in to the register of the court, subject to further order of the court, be applied to the payment of all costs and allowances taxed and charged in this case, and the balance, after paying costs and allowances, be applied to the satisfaction, as far as it will go, of the decree rendered against Washburne in favor of Lilienthal.

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OUR next number will contain a very interesting article by Prof. Hough on a new sensitomiter, with which he has been experimenting for some months, and which involves an entirely different principle from anything heretofore constructed for the purpose.

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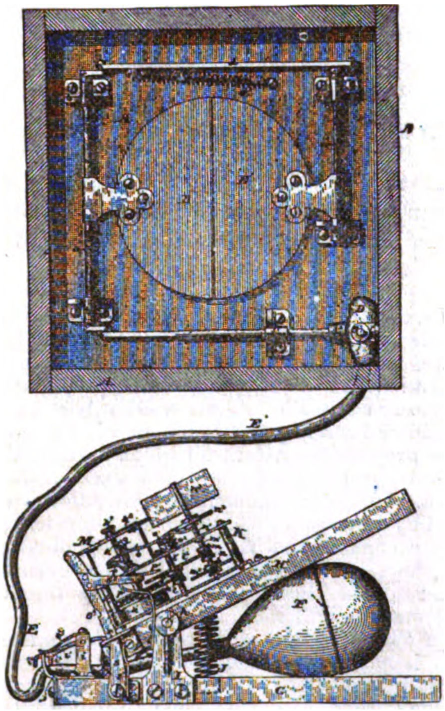
We shall publish in our next a list of hotels in Cincinnati, with their rates for the con tion.

Patent Intelligence.

299,289.—Photographic Camera. Charles W. Stiff, Foxborough, and Nathan'el C. Bousley, Salem, Mass. Filed Aug. 27, 1883. (No model.)



Claim.—1. In combination with a photographic camera, a mechanism to be worked by the operator, arranged and adapted to open the lids or shutters of the lens-tube, a device for automatically locking and retaining said lids or shutters in their open positions, and a timing mechanism arranged to be set in motion by the operation of the shutter-opening mechanism, and to release said locking device and permit the closing of said lids or shutters at the end of any predetermined interval of exposure.

2. A pneumatic device adapted to open the lids or shutters of a photographic camera, and at the same time set in motion a timing mechanism, which will automatically close the same at the end of any predetermined interval of exposure.

3. A presser adapted to open the shutters of a photographic camera by forcing air into an expanding-chamber, to keep said shutters open by preventing the return of the air by any suitable mechanism, and at the same time to set in motion a mechanism that will automatically release the air from said chamber at the end of any predetermined interval of exposure, thus allowing the lids to close.

4. The combination of the lever H, pivoted to the frame G in any suitable way, the bracket r', with its slotted horizontal projection r, the spring-actuated lever s, provided with the notch s^2, the bulb F, the tube E, and the bulb D, in conjunction with a suitable mechanism for operating the lids or shutters of a photographic camera, substantially as and for the purposes specified.

5. The combination of the spring-actuated nipper lever i', the forked bracket j, the spring-actuated hook j', all attached to the frame G, and the projection u and plate x, secured to the shorter arm of the lever H, all adapted to operate substantially as and for the purposes described.

6. The combination of the presser GH, spring J, the projection r, the lever s, provided with the notch s^2 and bent arm s^3, and the arm w, attached securely to the shaft k of the clock-work, all adapted to operate substantially as and for the purposes described.

7. The combination of the dial M, the pointer k^6, the ratchet-wheel k^3, the pawl k^4, the gear k^5, and the spring k, all adapted to operate substantially as and for the purposes described.

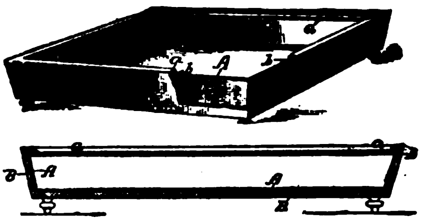
8. The combination of the friction-disk n^2, mounted upon the shaft n' of the clock-work, the spring-actuated lever o, the bent lever p, and the bent stationary arm p', all adapted to operate substantially as and for the purposes described.

9. The combination of friction disk n^2, mounted upon the shaft n', of the clock-work, the spring actuated brake-lever o, the bent lever p, the spring-actuated dog q, the arm r, securely fastened to the shaft k, and means for operating the lever p, substantially as and for the purposes specified.

10. The combination of the lids or shutters BB', adapted to close the inner end of the lens-tube of a photographic camera, the shafts $a\ a'$, the rocker-arms $c\ c$, the connecting-rod d, and means for operating the same substantially as and for the purposes specified.

11. The combination of the lids or shutters BB', adapted to close the inner end of the lens-tube of a photographic camera, the shafts $a\ a'$, the rocker-arms $c\ c'$, the connecting-rod d, and the spring d', all substantially as and for the purposes described.

299,454.—Bath-Tray. Edward Bloomfield, Chicago, Ill. Filed Feb. 12, 1884. (No model.)



Claim.—In a tray structure for photographers' use, the combination, with an inner tray, as described, of an outer inclosing companion tray, provided around the top with an inward projecting bead having a continuous groove in the under side of the same for the engagement of the upper edge of the inside tray, whereby said trays are closely locked together to form a solid structure, substantially as and for the purpose set forth.

299,857.—Preparation of Collodion. Ernst Schering, Charlottenburg, Prussia, Germany, assignor to Bachrach & Bro., Baltimore, Md. Filed Nov. 21, 1883. (No specimens.) Patented in Germany, Apr. 7, 1878, No. 2,660.

Claim.—A new and improved composition of matter intended for the preparation of collodion, as hereinbefore described, which is elastic and transparent while fresh, and becomes hard on drying, and is neither explosive on concussion nor spontaneously combustible, and is therefore free from danger in transportation.

◆

The management of the Northampton (England) Museum, announce an International Exhibition of Photographs, to be held in the spacious and well-lighted galleries of the museum, from Dec. 15, 1884, to Jan. 10, 1885.

One silver and one bronze medal will be given in each of the following classes:

1. Landscapes, larger than 8½ x 6½ inches.
2. Landscapes, 8½ x 6½, or smaller.

3 & 4. Portraits, under same classification as to size.

5. Instantaneous marine photographs.
6. Instantaneous subjects, other than marine.
7. Interiors—8. Genre.
9. Enlargements—10. Transparencies.

Four bronze medals will also be awarded, according to discretion of judges, for other meritorious productions.

Further particulars will be furnished by the Hon. Secretary, H. Manfield, the Museum, Northampton, England.

PHOTOGRAPHY.

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THE following hint from Mr. England may prove useful to some of our readers. It is well known that many photographers add dry pyro to the other ingredients of the alkaline developer, immediately before using, and that they do so because all the published methods for keeping pyro in solution are more or less unsatisfactory. Mr. England says the reason pyro will not keep perfectly in ordinary commercial alcohol is, that the latter contains more or less water (5 per cent usually). By using *absolute* alcohol the difficulty is overcome. Dissolve an ounce of pyro in four ounces absolute alcohol. The difficulty, in many cases, will be to obtain alcohol of this grade, as it is not usually kept in photo stock houses, and we think not in the majority of drug stores. Most of the water can be eliminated from ordinary alcohol by putting in some lumps of quicklime, and letting it stand a day or two—then decant and filter.

◆

WE quote the following from the *Photographic News* of May 30, as indicative of the present condition of the dry plate manufacture in England, and imagine that it is gradually coming to the same state of affairs on this side of the Atlantic:

> "There are fewer actual manufacturers of gelatine plates than is ordinarily supposed, as most of those who profess and call themselves makers are merely dealers. Indeed, we could mention one provincial dry plate works which supplies no less than six professed makers. Or, to put the matter more concisely, the weaker are being ousted by the stronger; and only those who can successfully battle with unforeseen difficulties may hope to survive."

IT seems that the term "half-plate" does not mean the same thing on both sides of the Atlantic. Strictly, of course, it should mean 4¼x6½, which, indeed, used to be the standard "half-plate" in England, and we rather think it was in this country also, a long time ago; but the funny part of the matter is, that while the Americans have reduced their size by cutting an inch off the length, their English cousins have increased theirs by adding half an inch to the width. "6½x4¾" is generally understood for "half-plate" over there. Why was the American size changed to 4¼x5½, anyway? It is certainly not as good a shape for most purposes.

◆

WE extract the following from a private letter received from Prof. Charles F. Himes, of Dickinson College:

> "A matter has just suggested itself to me in connection with the Summer School of Photography, viz.: The organization of a National Amateur Association, not entirely independent, but based upon existing local organizations, by making members of these members of the National and permitting election outside of the local societies. It would be intended to unify in a measure amateur interests, broaden the scope of all the local societies, and serve as a medium of interchange. There need be no expensive machinery. Some one local organization might be made for a year executive, etc. My plan would be now to send invitations to the various local associations to be represented by two or more members at Mountain Lake Park, say August 14 or 15.

We invite suggestions on this subject from our amateur readers.

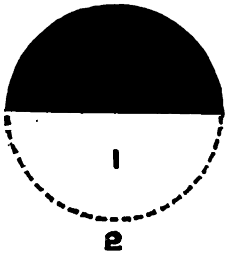
A New Sensitometer.

BY PROF. G. W. HOUGH.

Various methods have been employed for ascertaining the sensitiveness of photographic plates, but we do not know that any hitherto used are capable of giving directly the sensitiveness as referred to any convenient standard. The use of blackened gelatine films may give sufficiently reliable results, but from the nature of their construction, no two instruments will be precisely alike, and even in the same instrument there is no definite relation between the different parts of the scale.

The use of a series of tubes having unequal areas might answer under certain conditions, but such an apparatus would be complicated. I imagined that a single long tube, a stove-pipe, for example, in which was arranged a series of numbers at different distances from the opening, would solve the problem, but on examining such a device, it was at once concluded that it would not answer the purpose, unless the source of light and the camera were placed at a considerable distance from the opening.

It occurred to me that if a perforated disk was made to revolve in front of a scale of numbers, the light received by each would be directly proportioned to the angular opening in the disk. To illustrate, suppose we have a semi-circular disk, fig. 1, which is made to revolve rapidly, then any number covered by it when in rotation would receive only one half as much light as one outside of its circumference. If the disk revolves with sufficient speed both numbers will be constantly visible to the eye, but one will receive only one half as much light as the other. On this principle is based the sensitometer about to be described. In our first experiments we constructed a snail on a scale of one to twenty, so that the figure 1 should receive one-twentieth of the whole light, 5 five-twentieths, etc.



It was soon found, howevre, that the scale was too short for accurate determination of sensitiveness; since, when the proper exposure was made for a fully timed negative, the whole scale was photographed. Our second snail was on a scale of 1 to 50; in this case also a large part of the scale was shown in the negative, both for collodion and emulsion plates.

In order to get a longer scale in a compact form an opening was made in a card-board disk, fig 2, based on the ratio of one to five hundred, starting with 100 or one-fifth of the light entering the camera. For the upper part of the scale, from 100 to 30, only every tenth number was inserted; below 30 the numbers decrease by units.

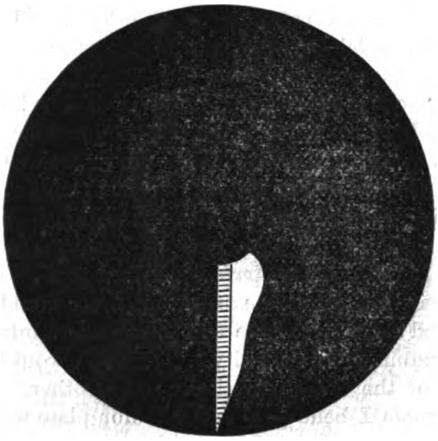
The opening in the disk, fig 2, is not drawn to scale, but any one may easily construct the opening for any scale desired. For the beginning of my scale the angular opening is 72 degrees, equal to one-fifth the whole light. For one-tenth of the whole light the angular opening will be 36 degrees, at that point, and for one one-hundredth of the whole light the angular opening will be 3.6 degrees, etc.

The following is the scale. The numbers as they now stand represent the time of exposure. It may, however, be reversed so as to give sensitiveness directly.

100
90
80
70
60
50
40
35
30
29
28
27
26
25
24
23
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1

Now when the disk is put in rotation and an exposure is made, each number developed shows at once the amount of light it received. If the last number visible was 5, the light-equivalent for that number would be $\frac{5}{500}$ of the light employed. If the full aperture of the lens was used and the time of exposure was 10 seconds, the equivalent exposure for the figure 5 would be $\frac{20x5}{500}$—0.20 sec. We will suppose a similar plate is exposed, with the aperture of the lens reduced to 1-15 of the area, the time being the same. In this case the last number printed should be 75 of the scale. The light equivalent will then be $\frac{75}{500}\times 20 \times \frac{1}{15}$—0.20 sec. Having ascertained by a number of experiments the time required for the last number which can be seen, for any standard plate, the relative sensitiveness of any other can be ascertained. In the example given above, we will suppose the plate exposed was wet collodion, of which the light equivalent was 0.20 sec.

In case the sensitiveness of an emulsion plate is wholly unknown we may expose for the same time and with the same stop as was used before; suppose in such an experiment the last number printed was 6, then the light-equivalent would be $\frac{6}{500} \times 20 \times \frac{1}{15} — \frac{1}{62}$ sec. As the collodion plate gave $\frac{1}{5}$ sec. the emulsion plate is twelve times as rapid.



If another plate shows the number 4 under the same conditions its light-equivalent would be $\frac{1}{94}$ sec. or nineteen times more rapid than the standard.

In order to secure more accurate results, and also to assist in development, it is preferable to give approximately the correct exposures for the matter outside the scale; then the last numbers visible will fall near the middle. In this case any error of reading would not materially affect the result. The apparatus which we have used is simply a blackened card-board disk eleven inches in diameter, having a suitable opening and rotated by a Yankee-clock movement. A scale of numbers, written with India-ink on white paper, is placed underneath it.

The disk makes about two revolutions in one second; but the speed of rotation is a matter of no consequence. With this simple device the relative sensitiveness of different plates is readily ascertained within five to ten per cent from a single exposure.

In comparing dry plates by different makers, we used the pyro developer (Cramer's formula). The same strength of developer was used for all, and the plates were left in the tray for five minutes, in order to carry the development as far as it would ever be required in actual work.

The following experiment will indicate the working of the apparatus, using the same stop and giving the same time. Four different brands of commercial plates were successively exposed and then developed. The last numbers visible in the scale were, 10, 8, 6, 10.

In this example the relative sensitiveness of the plates is shown directly by the numbers 10, 8, 6, 10; the plate showing 6 being $1\frac{2}{3}$ times more rapid than those showing 10.

Commercial plates by nine different makers were compared with the wet collodion plate with the following results:

The sensitiveness of the collodion plate being 1, the following numbers indicate the rapidity of the emulsion plates: 21, 20, 18, 16, 16, 14, 13, 13, 13.

An inspection of these numbers indicates a good deal of difference in the speed of plates.

It may be desirable to give some idea of the time of exposure which is necessary according to these numbers.

Now the collodion plate required for the minimum exposure one-half second, with the full opening of a Darlot No. 1 Rapid Hemispherical, to make a negative of a brick building or a well lit landscape. Ordinarily, however, we give one second, in which case the plate is fully developed inside of thirty seconds.

On the basis of one second an emulsion plate having a speed of 20, when exposed on a similar subject should have not more than 1-20 second with the full aperture of a Darlot No. 1 lens. In order to approximately secure a correct exposure it is necessary to use the smallest stop (3 mm.) and simply uncap. For the slower plates the 5 mm. stop may be used and the lens simply uncapped.

These times refer, of course, to a well lit outdoor subject when there is sunlight. In the course of these experiments it became necessary to accurately determine the size of the different stops belonging to a No. 1 Darlot Rapid Hemispherical lens. Not having a suitable micrometer, I used my lantern for this purpose, the images of the different stops being projected on a screen, when they were measured with a rule.

The smallest one (3 mm.) was found to be greatly in error, the others approximately correct, the full aperture being 20 mm.

As a good many amateurs use this lens, I ap-

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pend the following table, giving in round numbers the light-equivalent for each stop:.

	LIGHT.
FULL APERTURE	1
18 mill.	3/4
15 "	1/2
12 "	1/3
9 "	1/5
7 "	1/8
5 "	1/15
3 "	1/26

If it requires ten seconds with the full aperture to make a negative, an interior, for example, it will require 260 seconds with the 3 mm. stop to get a negative of the same density.

On an out-door subject, if the correct time for the full aperture is 1-20 second, the 9 mm. stop will require 1/4 second, etc.

I have before stated that the minimum time for a collodion plate, such as I used, was 1/2 second for the full aperture. Under the same circumstances the rapid emulsion plate would require only 1-40 second. Now, Mr. S. W. Burnham's drop shutter, when operated by gravity, gives an exposure of 1-14 second, and using the 12 mm. stop, the equivalent exposure is 1-42 second; hence, on a well lit subject a full timed instantaneous negative may be made.

With this form of sensitometer the relative intensity of the light at different times, or in different places, can easily be ascertained. It is simply necessary to expose a plate for a given time and note the last number developed. A similar plate exposed in the same way at any other time or place will show a certain number, and the intensity of the light will be directly proportional to the numbers.

It has been stated that if a plate is exposed to a small amount of light previous to being used it becomes more rapid. A simple experiment was made to ascertain whether the statement was true.

An emulsion plate was cut in four pieces. One was exposed without seeing light; the others had, respectively, 10 seconds, 30 seconds and 60 seconds' exposure through the red-glass window of the developing room before being used. The four pieces were all developed together. The one which was submitted to the red light for 60 seconds flashed right out like any over-exposed plate; then the others, in proper order. All were left in the developer for five minutes; when fixed the first was found buried under a dense fog, so that only a portion of the scale could be read. The second showed considerable fog, and the third a trace; the fourth, of course, was perfectly clean. The numbers shown in the three pieces were precisely the same—if anything, a little advantage in favor of the piece which was handled in darkness. The explanation of the foregoing belief is simple. A plate which has been submitted to other light than that belonging to the exposure will necessarily begin to develop quicker, but there will not be as much film left for the negative. Whatever light has been on it either in its manufacture or elsewhere, will impair its usefulness in proportion to the amount of light it received.

The question occurred to me whether it was possible to use the foregoing method and mechanism for an absolute standard of sensitiveness, so that plates tested in Chicago and London should be directly comparable. With a lens of given area and focal length this may be readily accomplished, provided we have a standard light. The electric light might be used, but there would be a good deal of trouble and some uncertainty in determining its intensity. The same would be true of the magnesium light, or any other. On the whole I believe a wet collodion plate would be the most convenient standard, and could be made to give comparable results within small limits of error, provided a uniform standard was adopted for the collodion and the bath.

ON THE ACTION OF LIGHT ON PHOTOGRAPHIC SILVER COMPOUNDS.*

BY P. C. DUCHOCHOIS.

Since the discovery of the art of photography, there is no phenomenon which has more attracted the attention of philosophers and experimentalists than that of the action of light on the silver compounds employed to obtain the photographic image and as should be expected from the nature of the subject different theories have been set forth to explain it. When the image is formed by the action of light alone, as in the printing process, two theories are advanced: One, that the silver chloride is reduced to sub-chloride; the other, that the reduction is complete and the image formed of metallic silver.

As to the former theory, it should be remarked that there is no conclusive chemical experiment to prove that the chloride has been reduced to a sub-chloride, for such a compound has never been isolated, its formula, Ag_2Cl being therefore hypothetical, not determinated by analysis. Nor is the color characteristic: A brown chloride is obtained by treating the silver sub-oxide with chlorhydric acid, the sub-oxide itself being considered by eminent chemists as a mixture of the protoxide and metallic silver. It should be remarked also that the color of the isolated silver chloride is different from that of the substance obtained by electricity or the immersion of a silver plate in a solution of copper chloride, CuCl, and,—what is remarkable,—that a chloride insensitive to light has been obtained by Dr. Percy in exposing silver leaves to a current of chlorine. If the reduction of a silver chloride to a sub-chloride were admitted, one should also admit by analogy that all the silver salts acted on by light are first transformed into sub-compounds, and that there is consequently a sub-sulphate, a sub-fluoride, a sub-lactate of silver, etc., etc., and, as says Mr. Davanne, that there is an infinite variety of sub-chloride at various degrees basicity according to the amount of haloid eliminated. That the silver blackened by light is a mixture of the white chloride and metallic silver in a state of minute division has been experimentally demonstrated by Scheele, R. Hunt, Field, Davanne, Girard and many other chemists. A few years ago I repeated the experiment first made by Scheele, and here are the results, which, in my opinion, leave no doubt on the entire reduction of the silver chloride by the prolonged action of light: One hundred and fifty grains of freshly prepared silver chloride were divided into three bottles, covered with distilled water and exposed to sunshine. The water was decanted at night to prevent the chlorine from reacting on the reduced compound, and replaced for the subsequent exposure. The contents of each bottle were the third day thrown on a filter and the black substance washed. The whole of the filtrate gave with silver nitrate a precipitate of 46.05 grains of dry chloride showing an elimination of 11.39 grains of chlorine.

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*Read before the Photographic Section of the American Institute, June 3d, 1884.

$$(a)\ 34.66\ Ag+11.39Cl=46.05\ AgCl.$$

The black substance treated with liquid ammonia was partly dissolved. The solution saturated with nitric acid gave a precipitate of 100.80 grains of white chloride. The undissolved part, a gray powder weighing 35.10 grains, treated by nitric acid, was not entirely dissolved and the residue, too small to affect the result of the experiment, was not estimated. With chlorhydric acid this solution gave a precipitate of 45.78 grains of silver-chloride, which shows that the gray powder was metallic silver.

$$(b)\ 35.10\ Ag+11.53Cl2=46.63\ AgCl.,\ \text{or}$$

$$(c)\ 34.455\ Ag+11.325Cl=45.78\ AgCl,$$

the difference being accounted for by the residue not estimated. In comparing these results, one finds that the quantity of chlorine found in the filtrate is very near the same as that which should have been disengaged from the insolated silver chloride to set free the gray substance, *i. e.*, the metallic silver:

(a) Chlorine in the filtrate, 11.39;
(b) Chlorine combined to silver, 11.53; or,
(c) 11.325.

It is evident from these analyses that the isolated compound was a mixture of the chloride and metallic silver, for, if the silver chloride had been reduced to sub-chloride, the quantity of chlorine found in the filtrate (a) would have been half less:

$$35.40\ Ag+5.768\ Cl=40.868\ Ag_2Cl.$$

If a phenomenon, in which the changes of the progressive action of light can be seen at all the stages of the insolation, and ascertained by analyses, has led to different theories which, however, only differ by the admission of a more or less complete reduction of the silver salt, a still greater divergence must result from the researches when in the experiments no observation can be made and no chemical means can detect the changes that have taken place. One is then guided only by the known behaviors of the silver salt under the long influence of light and must admit by analogy similar results, or investigate whether the phenomenon is not due to some disturbance in the atomic arrangement, as in the images of Moser. Hence the chemical and physical theories to explain the development of the invisible image by precipitation of the silver in a nascent state of reduction. In the chemical theory the silver salt of the sensitive film is said either to be reduced to metal in infinitesimal quantities, and the image formed by the silver from the developer deposited upon it by molecular affinity, or to be converted into a sub-silver salt which is reduced by the reagent (iron protosulphate, pyrogallic acid, etc.,) the development proceeding then as above. In the physical theory one admits that no actual reduction has taken place, but that the molecular arrangement of the elements of the silver salt is altered more or less on those parts acted on by light, and that they acquire thus the property of attracting the silver when precipitated from the nitrate by the reagent.

Such were the theories admitted before the discovery of the alkaline development by Mr. Henry T. Anthony, of New York, in 1862. This discovery, the most important ever made in photography, upset the physical theory, for the image being in the new process entirely formed of the metal from the impressed silver salt, it was thought impossible to explain the development otherwise than by a reduction continued by the alkaline reagent. The new chemical theory is based, as before, on the identity of visible and invisible image, although it does not necessarily follow that if a long insolation determinates a reduction, an exposure of a fraction of a second effects the same result. There are many chemicals besides the silver salts which by long exposure to light undergo a decomposition, but in which no alteration can be detected when they are exposed to that force during a short period. Heat also reduces certain compounds without, however, having any influence upon them if its action is limited, for an accumulation of force is always necessary to produce such a radical molecular change as a reduction, although at the first contact, the same force is capable of disturbing the atomic arrangement.

As to the development, the theory of photographers who admit the complete reduction is far from being satisfactory. A better explanation, also based on the affinity of the reagent for oxygen, is given by those who assume that the silver salt is reduced to a sub one. It is as follows: In the presence of the developer the sub-salt is reduced and an equivalent of the metal combines with the unaltered silver salt just in contact with it to form a sub-salt, Ag_2 Br., which is in its turn reduced by the reagent, the reactions proceeding until all the silver salt is reduced. Thus the image is formed by the reduction of the unaltered silver salt into a sub one and that of this sub-salt into metal. Whether such a double decomposition takes place can be ascertained by preparing the silver salt in the dark and placing it in the presence of silver in the nascent state of the reduction, as in photography. The experiment has been made, and a mixture of metallic silver and of the unaltered bromide has been the result of the operation. It is manifest, therefore, that the silver salt reduction cannot be effected by the affinity alone but that the intervention of another force, that resulting from the persistence of the luminous action, is also necessary. If the phenomena cannot be scientifically explained by these theories, perhaps some light can be thrown upon them by investigating, not what is the result of the luminous action but in what manner light acts to effect it. Before proceeding I think it will not be out of place, in order to be well understood, to say a few words on the properties of matter and on the physical forces that act upon it.

One knows that bodies are formed of an aggregate of particles, the atoms, which are the smallest component parts of the element, or elements, that constitute the mass, and that not only the atoms are indestructible, but as they are indestructible and indivisible, they escape certain influences of heat and light that act upon their aggregate; the dilation, for example, is the separation of the atoms from each other, not the expansion of the atoms themselves.

To conceive the extreme divisibility of matter, it suffices to state that the hundreth part of a cubic line of silver dissolved in nitric acid produces a nebulosity in 500 cubic inches of slightly salted water, so that the particles of silver in suspension must be at least the thousand-millionth part of a cubic line. As it is seen, bodies are formed of an inconceivable number of atoms kept together by the force of attraction. It should not be supposed, however, that they are juxtaposed so as to form a whole homogeneous mass, for the properties of bodies would then be inexplainable, many of them, such as the elasticity; the cubic dilation would even be impossible. It must be granted on the contrary that they do not touch, and that, surrounded by an imponderable fluid subject to the forces always active in nature, they are constantly in motion and oscillate around each other like the celestial bodies, within certain limits regulated by the attraction, unless another force, or an accumulation of the same force that keeps them in motion, comes into play and destroys the equilibrium. The natural forces that tend to dissociate the elements of the silver salts,—the only phenomenon to be here considered,—are light and heat.

The sources of light lie, according to the dynamic theory, in the motions of the elements of the sun which are transmitted by the vibrations imparted to the molecules of the imponderable atmosphere, the ether; but as the solar atoms vibrate with different speeds, other waves of greater amplitude than the various luminous ones and possessing a great thermic power are generated. Heat and light are consequently always united, and although in photography, light is the real actinic agent, both must play a certain part on the silver compounds. This can be ascertained by experiments; if a sensitive film is exposed to the sun's rays filtered through an alum solution which absorbs nearly all the heat, it will be less rapidly impressed than when heat and light act in conjunction, the heat in the experiment being that of another pencil of light projected through a solution of iodine in sulphide of carbon which stops the luminous rays. However, heat can determinate a dissociation, either alone (oxides, carbonate of silver, etc.) or in presence of an element capable of fixing one of the components, (chloride, iodide of silver, etc.) What is the action of heat in these phenomena? It is thus explained:

In coming in contact with a body, heat imparts to the ether a vibratory motion which, extending to the atoms, causes them to revolve around each other more and more rapidly, and as the centrifugal force thereof progressively increases they come apart at such a distance that the attraction is nullified, and the molecules separate into their constitutive elements. But light is also a form of motion differing only by the length of the period of vibrations from that which produces heat, and under its action the dissociation cannot otherwise be explained. When a body is subjected to a moderate shock, the concussion is hardly perceptible, but let the shock strike it in rapid succession, the vibrations soon disintegrate it and the body splits into parts. Light acts in a similar manner. The luminous waves travel with a speed of 308 million metres per second, the most actinic visible wave—the violet—effects in the same period 728 millions of millions vibrations and the ultra-violet 900 millions of millions, the average for the chemical rays, so called, being 740 millions of millions vibrations. It is therefore conceivable that such a rapid succession of shocks imparts in certain bodies an atomic motion leading to the dissociation of their elements; moreover that at the same moment the heat united to the light also determinates a vibration which, corresponding in time with that from the luminous action, greatly increases the force that tends to destroy the equilibrium. Whether this theory be true or not, there is no doubt that the action of light is a dynamic action which causes the dissociation of the elements, without which no chemical reaction such as those of photography could take place.

How far can an exposure of less than the thirtieth of a second affect the affinity that keeps the elements together? This is a question impossible to answer; but as no chemical test can show that any part of the haloid has been set free, it may be inferred that no reduction whatever has been effected, and there is only a tendency to dissociation affecting the affinity of the elements for each other, and thus placing them in a state of equilibrium favorable for other affinities to come into action. This being admitted, it is not necessary for the explanation of the phenomena of photography to resort to the formation of hypothetical salts and reactions not admissible in a science of facts like chemistry: whether the insolation be sufficient to dissociate the elements or to simply increase the distance that separates the atoms,—which is probable in case of short exposures,—the development is explained by the presence of a reagent whose affinity for one of the elements fixes it when the attraction is either nullified or modified, and thus effects a reduction which commences on the parts first in contact with light, and progressively extends more or less to the interior of the mass according to the greater or lesser molecular perturbation resulting from the different vibratory power of the luminous waves.

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ANTHONY'S ENLARGING CAMERA.

In our last number we promised to say something as to the merits and defects of this apparatus.

Briefly, they may both be summed up in one word—cheapness.

The arrangement is compact and convenient, the bellows attachment, connecting the object lens with the box proper, being one of its best features, while the internal grooves and slides for condenser and negative enable the proper adjustments to be made with facility, and the whole arrangement is light tight when closed. The only object in having the condenser and negative relatively adjustable, is to provide for different sizes of negatives, and practically it is of service only in copying vignette heads, which are liable to be of various sizes. Of course they could all be copied by placing them close to the condenser, but with a small head this would necessitate longer exposure than when set a little away from it.

But, even granting this advantage, it could have been secured by moving the negative slide alone, the condenser remaining fixed. As to adjusting the distance between the condenser and source of light, this we prefer to accomplish by moving the lamp.

The radical defect of the whole arrangement consists in using a single, instead of a double, condenser. The amount of light lost in this way is enormous, and moreover it is almost impossible to enlarge to (say) life size from a good sized cabinet head with a $\frac{1}{4}$ lens, because you cannot get the necessary distance between condenser and objective; and to use a $\frac{1}{2}$ plate lens requires a good deal of space, and moreover works very slow. We readily admit that it would be impossible to supply a pair of 5-inch condensers and still sell at the present price of the apparatus, at the same time allowing a fair profit to manufacturer and dealer—at least, what passes for a fair profit in the photo-stock trade. But therein lies the whole trouble; the effort has been to get up something too cheap, and we feel obliged to record our conviction that therein the makers have made a mistake. As owners of the patent on gelatino-bromide paper for the United States (whatever that patent may be worth) it would seem to be to their interest to encourage its use for enlarging purposes; but we fear this enlarging camera will have a contrary effect—*i. e.*, it will tend to disgust every one who uses it, not only with the enlarging apparatus itself, but with the process of enlarging on gelatino-bromide paper in general, because many photographers have not sufficient optical knowledge to understand when their failures are due to the appliances in use, and when to their own want of experience or to the chemicals.

The box is, moreover, unlined with metal or other material to protect it from the heat, and so made that its speedy destruction by cracking to pieces is inevitable. This would be aggravated if a good argand burner, such as the Moehring or Harvard, were substituted for the flat flame burner used; and this should be done, because the light from the former is much more concentrated than from the latter, the heat generated, however, being perhaps in still greater proportion.

In conclusion, we think Messrs. Anthony would find it to their interest to get up a good serviceable enlarging apparatus, and sell the same at as reasonable a figure as possible, but not at a price which every one with any knowledge of the subject must be aware is lower than anything reliable can be furnished.

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THE July number of *Outing and the Wheelman* is one of unusual excellence both in reading and illustrations. "Summer Days in the Catskills" is a charming piece of descriptive writing, supplemented with numerous fine specimens of the engraver's art, including a full-page frontispiece of the "Iron Duke." "En Province à Cheval Mecanique," is continued. "A Canvas Canoe" is a full and practical illustrated description of how to make this useful aquatic conveyance.

The serial, "Summer Sweethearts," is advanced a stage. "Walking in Belgium" is a graphic account of the tribulations of an American who visited that country for a bicycle tour, but found walking the only means of progression most of the way.

A good deal of cycling, yachting and canoeing news is to be found in the latter part. But we have not space to indicate a moiety of the good things it contains.

Fifth Annual Convention and Exhibition of the Photographers' Association of America.

TO BE HELD IN MUSIC HALL, CINCINNATI, O., JULY 29TH TO AUGUST 1ST, 1884.

Officers: J. H. Kent, President; Leo Weingartner, Secretary; W. A. Armstrong, Treasurer. Executive Committee: J. F. Ryder and E. Klauber.

The convention will open at 10 o'clock A. M., Tuesday, July 29th, and continue until Friday afternoon, August 1st. Sessions will be held at the same hour each morning, chiefly for the transaction of regular business.

It is intended to make the meetings of this convention eminently practical, and with this end in view, a large sky-light will be erected in the building, and placed in such a position that all photographers who wish, can have an opportunity of witnessing the demonstrations.

The officers consider themselves fortunate in having secured the services of a number of distinguished photographers, among them our esteemed President, J. H. Kent, to give actual demonstrations in the handling of a sitter, and the management of the light.

HOW TO CONDUCT AND MANAGE

the photograph business successfully, is one of the most important subjects to photographers at the present time. Mr. J. F. Ryder will read a paper before the convention on the subject, and from his well-known reputation as a photographer and writer the members can expect not only to be entertained but also instructed. Other features of the programme will be announced in due time.

DARK ROOMS

will be erected in the hall by the different dry plate manufacturers, with suitable light, water supply, and the best facilities for the development of the plates. It will be well for photographers wishing to avail themselves of this opportunity for acquiring a practical knowledge of the working and development of Dry Plates, to bring with them a photographic outfit. Neither chemicals nor plates need be brought. The city and suburbs furnish abundant material for the exercise of artistic taste and skill in the use of the camera and after exposure the plates can be developed with the assistance of able experts in the dark rooms in the hall.

PHOTOGRAPHIC EXHIBITS.

Every member is requested to prepare a number of duplicates from his best and most interesting negatives, and forward them for exhibition, framed or unframed as he thinks best. Pack them securely in box, with cover screwed on, and addressed (freight prepaid) to

LEO WEINGARTNER, Sec'y,
MUSIC HALL,
CINCINNATI, O.

Have your own address distinctly marked on the inside of the cover, that it may be returned without danger of being missent. Write your name plainly on the back of each picture. A conspicuous card bearing the name and address of each exhibitor should accompany each exhibit. There will be abundant room for all. It is the desire of the committee to have all the pictures placed on the day of the opening, and exhibitors are requested to send their exhibits a few days in advance. Please bear in mind that pictures placed on exhibition must remain until the final adjournment of the convention. There will be several prizes offered by the dry plate manufacturers; see the advertisements in the journals.

APPLICATIONS FOR SPACE

should be made at once to the Secretary, Leo Weingartner, corner Sixth and Central Avenue, Cincinnati, O. Make your applications early, stating the number of square feet required. There will be plenty of room for display of every design of backgrounds and accessories. Send them on.

FREIGHT.

In all cases FREIGHT must be prepaid: no attention will be paid to goods shipped otherwise.

MEMBERSHIP DUES.

All photographers and others interested in the study of photography are invited to join the Association. Dues, two dollars a year. No initiation fee is required other than the annual dues. All wishing to become members are requested to forward the sum specified to the Treasurer, who will send them receipts, and enroll their names as members on the books of the Association. Each member having paid his dues will receive a badge which will admit the wearer at all times to the meetings and the exhibition. The Association takes great pride in promoting the welfare and the best interests of the fraternity.

HOTEL ACCOMMODATIONS.

We have some of the finest hotels in the country, and the prices are reduced so as to accommodate all. Parties desiring their rooms in advance will please notify the Secretary, and he will see that they have comfortable quarters, especially those who are accompanied by ladies. The Secretary will have an office in the Music Hall building during convention week, where he will receive all who will come to the convention, and give information to those who have not secured hotel accommodations in advance.

PALACE HOTEL, corner Sixth and Vine. Rooms with bath, $3.00 per day; without bath, $2.00 per day.

BURNETT HOUSE, corner Third and Vine Streets. Rooms and meals, $3.00 per day.

CRAWFORD HOUSE, S. E. corner Sixth and Walnut. Rooms and meals, $1.75 per day.

DENNISON HOUSE, Fifth Street, between Main and Sycamore. Rooms and meals, $2.00 per day.

GIBSON HOUSE Walnut Street, between Fourth and Fifth. Rooms, meals, and bath, $4.00 per day: without bath, $3.00.

GRAND HOTEL, corner Fourth and Central Avenue. Rooms and meals, $3.00 per day.

HOTEL EMERY, Emery Arcade. Rooms and bath, $3.00 per day. One person in a room, $2.50; two in a room, $2.00.

GALT HOUSE, corner Sixth and Main Streets. Rooms and meals, $1.50 per day.

ST. JAMES, Fourth and Hammond Streets, Rooms and meals, $2.00 and $2.50 per day.

QUEEN CITY HOTEL, corner Sixth and Race Streets. Rooms, and meals, $1.50 per day.

WALNUT STREET HOUSE, between Sixth and Seventh Streets. Rooms and meals, $2.00 per day.

GENEVA HOTEL, corner Sixth and Race Streets. Rooms and meals, $2.00 per day; two in a room, $1.50 per day.

LANTERNS FOR PROJECTION.

BY L. D. MC INTOSH, M. D.

So much has been written on the above head that it seems almost superfluous to add anything more to the literature of the subject. Yet if we look over this literature, and examine the apparatus of different makers, we find the same stereotyped formulæ have been followed, showing less improvement in the construction of lanterns for projection than in other optical instruments; therefore a few hints may not be out of place. We are often asked what lantern is the best. There are several important points to be taken into consideration in answering this question, as the range of work to be done with a lantern is varied One operator desires to use the instrument to project transparencies, another opaque objects, microscopic objects, etc. The essential points in a good lantern are the following: Light of sufficient intensity to illuminate the object, condensers of the proper diameter and focus, achromatic objectives of sufficient angle to admit all the light possible, and give a clear well defined image on the screen.

Various forms of lamps, gas jets, electric and magnesium lamps have been used for illumination. After experimenting with various forms of oil lamps I have laid them aside as almost useless, as they give a dim yellow light. I find the electric light gives sufficient intensity but is unsteady (I refer to the arc light, the incandescent electric light is steady but lacks intensity.) We have to choose between the oxyhydrogen and a modification of this light, viz., the ether-oxygen light. In the latter, sulphuric ether supplies the place of hydrogen gas. I prefer the latter as it is as intense as the former, more convenient to use and as safe as an oil lamp. To use with the best results the oxyhydrogen or ether light, the gas jet or burner should be properly constructed. It is a great mistake to use long jets and large mixing chambers, as the large chamber filled with the mixed gases is liable to snap out the light causing delay to the operator and annoyance to his audience. To avoid this, the mixing chamber should not be made more than $\frac{3}{8}$ inches in diameter and $\frac{1}{8}$ inch in depth; the tubes to convey the gases to this chamber should be about $^{1}/_{12}$ inch in diameter. The opening in the tube leading from the chamber should not be more than $\frac{1}{8}$ inch in diameter, and at the tip of the jet about $^{1}/_{24}$ of an inch. The tip of the jet should be made of platinum as this metal resists the great heat without fusing. It is often necessary when using the light for microscopic projection to move the jet close to the lime cylinder to intensify the light; the opening of the jet should be smooth and free from rough edges, as this impedes the flow of gas and causes hissing. A mechanical arrangement for centering the light is very convenient to use with the stereopticon and almost indispensable when using the microscope.

Of the various combinations of condensers I prefer plano convex lenses 4$\frac{1}{2}$ inches in diameter, 6 inches focus, mounted with their convex surfaces $\frac{1}{8}$ inch apart and their plane surfaces looking outward. Practically there is no advantage in using lenses of a greater or less diameter. Perhaps a little light may be gained by using a triple condenser, but the gain is so slight, it is overbalanced by the danger of the heat breaking the back lens, as this triple combination must be placed much nearer the lime cylinder than a double combination. It can be shown by experiment that a 3-in. condenser, 4-in. focus which could not be used more than 2 inches from the lime, will give as strong illumination as a 4$\frac{1}{2}$ in. condenser, placed 3$\frac{1}{2}$ inches from the light. This would seem erroneous if we did not take into consideration that the rays of light diverge from the incandescent spot on the lime and the fact that the intensity of light decreases as the square of the distance increases. Although the smaller condenser will admit as much light as the 4$\frac{1}{2}$ in, it would not illuminate a transparency 3$\frac{1}{2}$ inches in diameter, and the short focus would require a special wide angle objective; this would be impracticable as the screen would be brought too near the instrument. The same objections are encountered when we attempt to use small condensers with the microscope.

Let *a*, Fig 1, be a point of light, and *bc* the cone of light proceeding from it. Let *d* represent a condensing lens three inches in diameter, and *e* one 4$\frac{1}{2}$ inches in diameter. It will be readily seen that *d* will admit as much light as *e*, but the small lens *d* must be placed nearer the light than *e*. The cone of light from *d* will not illuminate as large a surface as the cone from *e*; the proportion is as the square of the diameter of the lenses are to each other; viz, as 9 square inches are to 20$\frac{1}{4}$ square inches. The lens *d* is brought nearer the luminous point *a* than lens *e*. Thus the cone of light *abc* will pass through

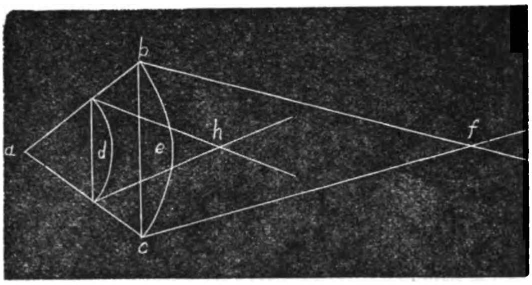

FIG. 1.

d and focus at *h*, and the cone from *e* will focus at *f*.

If a compound objective, *mn*, be placed at the proper focal distance from the small lens *d*, Fig. 2, the cone of light *bch* will not all pass through it, but a portion, as shown by the space between the dotted lines and the cone, will be lost.

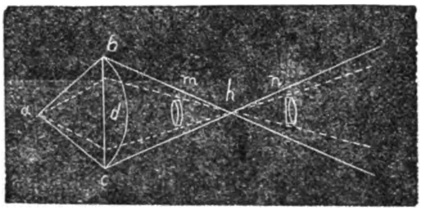

FIG. 2.

If the objective, *mn*, Fig. 3, is placed at the proper focal distance from the lens *e*, all the rays in the cone will pass through.

A mistake is often made in microscopic projection by using a secondary condenser between

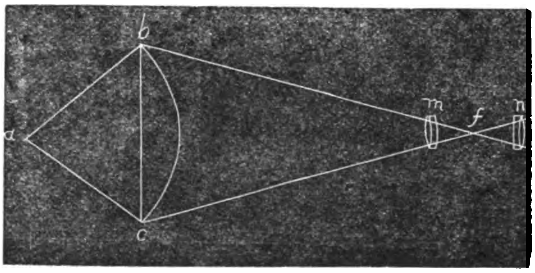

FIG. 3.

the main condenser and objective, as the cone of light is shortened and only a small part of the central rays pass through the objectives.

By using 4½-in condensers with 6-in. focus, transparencies and microscopic objects can be projected at the same distance from the screen, without any change in the lantern except placing the stage of the microscope about ¾ inch beyond the focus of the condensers.

For scientific work I find the quarter size stereopticon objectives the best, as they can be used at a convenient distance from the screen, say 20 feet and produce pictures 12 feet in diameter, or when the back combination is removed a 6-foot picture. At the same distance from the screen with ½ to 1½-inch objectives the best results can be obtained with the microscope.

The combination referred to above can be used with sunlight without any change, except removing the posterior condensing lens and attaching the tube carrying the front condenser and objective to a heliostat.

I have constructed a combination lantern on the above plan which can be used equally well for projecting transparencies or microscopic objects. The optical part can also be used with sunlight. Reference to the following cut will aid in the explanation.

The base *k*, Fig. 4, is of iron supported by legs five inches high, which leave sufficient space for adjusting the jet *p*, and lime cylinder *l*, without opening the door of the cover.

A mechanical jet slides on the iron base and can be moved backward and forward by the rod *c*; this gives the coarse adjustment, and the fine adjustment is obtained by turning the rod. Lateral and vertical motions are obtained with the thumb screws *d* and *i*. With this adjustment the light can be centered very perfectly. The lime carrier *l* can be moved backward and forward by the screw *g*, rotated, raised and lowered by the button *b*, and the light intensified at the will of the operator. *p* platinum tipped jet; *v*, *v*, stop-cocks which connect with the jet *p* by means of the rubber tubes *r*, *r*. These tubes allow the jet and mechanical movements to slide back or forward while the cocks are held stationary on the under side of the base.

The perpendicular iron front *h* is securely fastened to the base to receive the tube *a*, *a*, holding the 4½ inch condensers *e*, *e*, *e*, and draw tube *t*. The space *ss* is to receive the transparencies; the draw tube is to hold the stereopticon objective *mn*, or microscopic attachment. By moving the tube in or out high or low power objectives can be used. *f* is an adjustable screw to fasten the tube *a* firmly to the post on the base.

The metallic cover *bb*, Fig. 5, is to prevent escape of light into the room; it is hinged on one side of the base, so as to be turned back in a moment and a hall brilliantly lighted, allowing an audience to pass out without confusion. The excessive heat is avoided in this lantern in two ways; viz., a current of cold air enters around the jet through the open space in the base, and passes

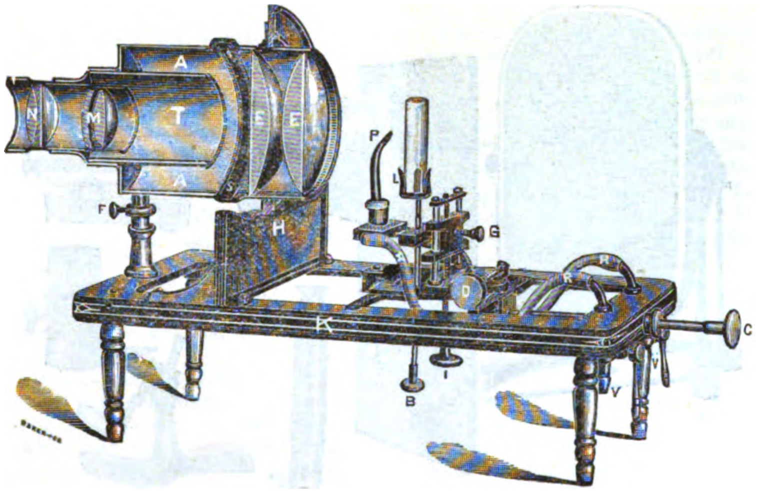

FIG. 4.

out when heated at *d*. The cover *bb* is of metal, and allows a portion of the heat to pass off by radiation. Thus the condensers are kept cool and the danger of breaking them from excessive heat avoided. Another important point is gained by the free circulation between the light and condensers, as the current of air carries away the vaporized lime and prevents it depositing on the back lens and thus obstructing the light.

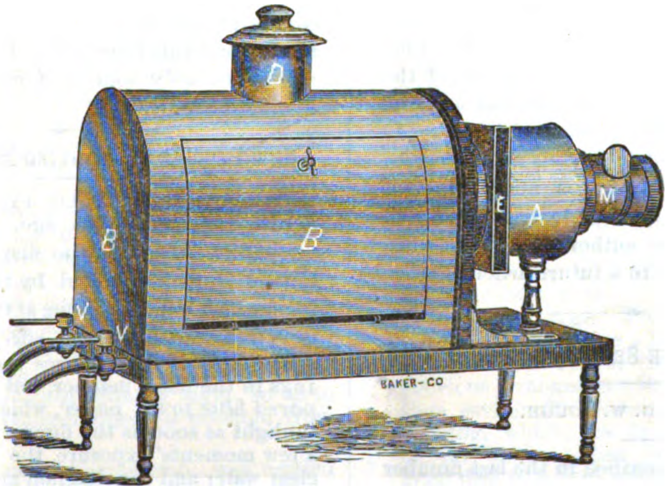

FIG. 5.

The optical part of this lantern can be attached to a heliostat and make a very complete solar stereopticon or solar microscope. (See Fig. 6).

By removing the tube *a* from the lantern and connecting it to the heliostat, all the change that is necessary is to remove the back condensing lens so as to lengthen the focus.

When the stereopticon is to be used the objective is screwed into the sliding tube *t*, and the mirror *r* adjusted by means of the thumb wheels *w*, *w*, so as to reflect the sun's rays through the condensing lens and objective, the views are placed in front of the condenser at *v* and an image projected on a screen. To use the solar microscope *o*, it is removed from its stand *s* and attached, as seen in the cut. By moving the draw tube *t* the focal distance is arranged between the condensing lens and objective (with sunlight a secondary condenser of the proper focus can be used to advantage). When a mounted object is placed under the spring clips of the stage and the focus adjusted, a clear and well-defined image is shown on the screen.

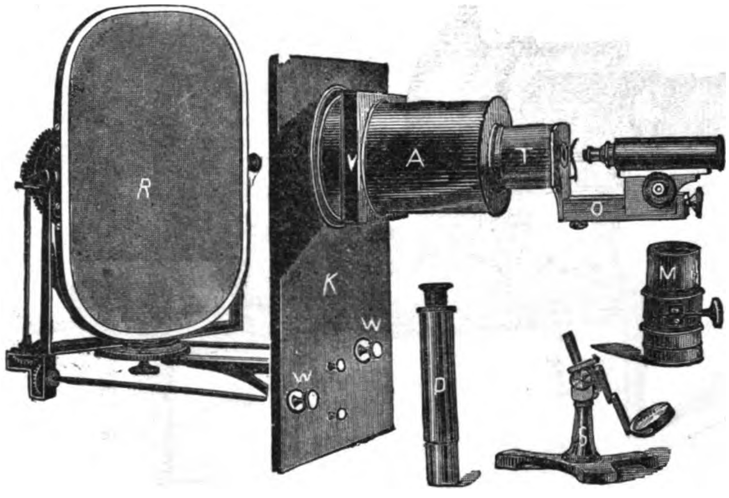

FIG. 6.

From the above description it will be seen that the optical part of a lantern can be constructed so as to be used as well with sunlight as artificial light. This combination furnishes an instrument that can be used for a wide range of work.

For photographing small microscopic objects with high power objectives intense illumination is necessary to produce good negatives.

With the combination described, if the lime light is not strong enough the optical part of the instrument can be used with sunlight and the most intense illumination possible obtained. As the microscope referred to in this article can be used not only as a solar or gas microscope for projection, but also as a single instrument, it will be the endeavor of the author to give an illustrated description of it in a future article.

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An Absolute Sensitometer.

BY PROF. G. W. HOUGH.

The sensitometer described in the last number of PHOTOGRAPHY may be made to give absolute results without much difficulty.

Let any scale of numbers from 0 to 100 be photographed or painted on clear glass. The plate to be tested may then be placed behind it, to make a contact negative. In front of the scale the snail or perforated disc may be rotated so as to give each number its proper amount of illumination; the light being a standard candle at one foot distance.

If the time of exposure be 100 seconds and the last number visible in the negative 10, the equivalent exposure will be,

$$100\times\frac{10}{00}=10 \text{ seconds.}$$

If another plate under the same circumstances shows the number 8, its equivalent exposure will be 8 seconds. In other words, the apparatus will give the actual time required for the light of one candle at one foot distance to make a legible record, and this time is the standard of sensitiveness; the only source of error will be in the standard candle.

◆

New Process of Printing Magnetic Curves.

While making some experiments in magnetism several months ago, I made use of a method of preserving the diagrams of "magnetic lines of force" obtained by the use of iron filings, which was new to me at that time, and which is extremely simple and effective. The process is as follows: The figures are formed by the filings in the usual manner, but on a *sheet of prepared blue print paper*, which is exposed to the sunlight as soon as the figures are formed. After a few moments' exposure, the paper is washed in clear water and the diagram appears as you see it on the specimen I enclose. If care is taken to have the light strike the paper as nearly normal as possible, the print obtained will be very sharp and clear. Hoping that this may prove of interest to some one investigating the subject of magnetism, I am yours respectfully,

A. D. STEVENS.

Worcester, Mass., April 22, 1884.

[The specimen of printing by the above process is very fine, and it should be practiced by those who are interested in preserving a record of such experiments. — *The Electrician and Electrical Engineer.*

Meetings of Societies.

CHICAGO PHOTOGRAPHIC ASSOCIATION.

The regular meeting was held at their room, 229 State Street, Wednesday evening, July 2d, Dr. H. D. Garrison, Pres., in the chair. On motion, reading of minutes last meeting dispensed with, and minutes adopted as published in the journals.

The Chair observed that, as the convention was so close at hand, some suggestions on that subject would be in order.

Mr. Douglass moved that the secretary be instructed to procure a sufficient number of badges for the members of this association who will go to Cincinnati. Also that the association rooms be kept open during the Saturday, Sunday and Monday preceding the convention, for the accommodation of visiting photographers, and that as many members as possible be on hand to entertain them. Motion carried.

Mr. Greene moved that when this association adjourns, it does so to meet on Saturday, 26th inst., that being the last Saturday before the convention. Carried.

Mr. Greene also moved that a committee be appointed to make all necessary arrangements connected with the visit of this association, and photographers from this vicinity, to the convention, and to receive and properly entertain visitors *en route.* He believed that, so far as transportation was concerned, Mr. Douglass had already made arrangements, but he thought a committee to take general charge of arrangements on behalf of this association, would be proper. Mr. Douglass explained that he had obtained a rate of $10 for the round trip, this rate being fixed, according to the rules of the Ticket Agents' Association, by the line having the shortest route. Moreover, if a sufficient number could be got to go together, a special train would be furnished at any hour they might decide upon.

Mr. Greene asked Mr. Douglass what time he thought would be the best to go, Monday morning or Monday night.

Mr. Douglass thought Monday night, so as to collect as many photographers as possible from outside.

Mr. Greene's motion being put, was carried unanimously.

Chair asked of how many members committee should consist. Mr. Greene thought three, appointed by Chair. Chair appoints Messrs. Douglass, Gentilé and Davies.

Mr. Greene understood that Mr. Gentilé had recently been to Cincinnati, and would like him to give them some news from that locallity.

Mr. Gentilé replied that he had not been there very recently, but expected to go to-morrow night, and on his return would be happy to supply any information in his power.

It was stated that a letter had been received from Mr. Weingartner, saying that he would like to have the Chicago delegation make its headquarters at the Palace Hotel.

Mr. Edgeworth endorsed this recommdation. The Palace was a first-class house, with large airy rooms, and offered very reasonable rates to the fraternity, $2 per day. He had recently been to Cincinnati and wished to state that Secretary Weingartner was anxious to have all exhibits in place before Tuesday, 29th (the opening day of the convention). He would take especial care in the matter of hanging, etc.

Mr. Markley called for a report on the electric light negatives made two meetings ago.

Mr. Douglass stated that these negatives had been handed to him for safe keeping and making proofs, that he had had them retouched, prints made and mounted, and half a dozen of each presented to the officers of the Van Depoele Company, and others who had sat for portraits. No copies were kept at the time, and through press of other business he had forgotten to have any more prints made. The negatives were still up stairs, however, and he would have copies printed and hung on the walls of the meeting room without unnecessary delay.

Mr. Markley showed a print from one of the negatives, made by himself on that occasion, and passed it around for inspection.

On motion, adjourned.

CHICAGO AMATEUR PHOTOGRAPHERS' CLUB.

The first "outing" of the club took place on Saturday, 28th ult., by C. & N. W. Ry., to Mill Creek, near Batavia, Ill. A party of twenty-five, including a number of ladies, assembled at Wells street depot at 8 A M., well equipped with cameras and dry plates, and left on the 8:30 train, a special car being placed at their disposal by the company. This car was switched off at Geneva to await the arrival of the branch train, a lay-over of about forty minutes occurring, of which advantage was taken by some of the more enterprising members to obtain some views. There is no station at Mill Creek, which is from a mile to a mile and a half south of Batavia, but the train stopped there by previous arrangement, both going and returning, thus saving the excursionists all unnecessary walking, which, the day being warm and some of the outfits rather heavy, would have been a good deal like hard work.

The scenery at this point, while by no means grand or striking, abounds with picturesque "bits" of water, foliage, etc., while the weather was, barring the somewhat elevated temperature (not high for the season, however), all that could be desired. The consumption of dry plates was something enormous, and a fair proportion of good negatives was secured. The size best represented was 4x5, but there were on the ground outfits for 5x7, 5x8 and 8x10. Most of the party brought with them some provision for lunch, and additional refreshments were provided through the forethought of Mr. H. G. Thompson, who acted as master of ceremonies, advance agent, financial manager, and pretty much everything else.

By 3:45 P. M., at which time the train "picked up" the party on the return journey, all seemed to have had sufficient of the delights of rural photography for one day.

Some exposures were made from the coach windows going and returning, but with what results we do not know at present writing. The party reached Chicago at 6:15 P. M.

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PHOTOGRAPHIC SOCIETY OF FRANCE.

At the regular meeting held June 6th, M. Davanne in the chair, some instantaneous views by M. F. Braun and M. Grassin, attracted a great deal of attention. Those by the latter gentleman were about 21×27 cm., a little larger than 8×10. One represented an immense wave at the moment of breaking on the shore, and transforming itself into a "mountain of spray." Another was a broadside view of a train at full speed (we are not informed what that speed was). M. Grassin is an amateur.

M. Davanne, in the name of M. Cheysson, director of the drawing office at the ministry of public works, described a process of drawing on a photograph, and called *photocalque*. It consists in making a silver print from a negative of the object, on albumenized paper, then going over all the outlines and other features intended to be preserved, with crayon or ink, and afterward removing the silver image by immersion in bichloride of copper, followed by hyposulphite of soda. If the object is to make a transfer for lithography or zincography, the drawing is done in transfer ink, and there is no occasion for dissolving out the silver image.

[M. Vidal, in reporting this meeting, mentions that he has himself used this process for twelve years, and it has probably been used nearly as long in America, only it is customary here to use bichloride of mercury instead of the corresponding copper salt. What there is new about it is therefore not apparent.—Ed. P.]

M. Davanne described a photographic outfit, including camera and accessories offered (as a premium to its subscribers) for thirty francs ($6.00) by the *Siècle*, and called attention to the cheapness of the whole outfit, expressing the opinion that its effect would be to greatly increase the number of amateur photographers.

On this matter M. Vidal makes the following comments:

"It is not for us to discuss here the choice made by the *XIX Siècle* of a photographic outfit rather than a clock or a revolver. We would only ask whether these very cheap and necessarily incomplete outfits, inadequate to fully satisfy even a tyro, have not rather a tendency to discourage amateurs by the unsatisfactory results they give, and to alienate from photography persons who, having dabbled in it without success, jump to the conclusion that they will probably never accomplish any better results, and turn their attention to some other hobby.

"On the other side, one may believe with M. Davanne, that, once furnished with an outfit, however rudimentary, one is tempted to procure a better, and continue the practice of so attractive an art.

"There are certainly two ways of looking at the question; but on principle, we prefer to see the tyro make his first essays with a good outfit, although he may have to pay a little more for it."

[We may remark here, *en passant*, that if this incident had happened in the United States, it would be in order for any professional photographers who might happen to be subscribers to the *Siècle* to immediately order their "paper stopped."—Ed. P.]

M. Balagny showed some very fine pellicular negatives, and positives printed from them, made on his "pellicular paper" (gelatino-bromide). Their size was 30×40 cm. = 11×14 nearly. The positives were of a warm, reddish tone which was considered very artistic. M. Balagny gave his toning formula, which is as follows: Dissolve one gramme of chloride of gold in one litre of distilled water; also, 30 grammes borax in a similar quantity of water; let it stand awhile, then add 200 grammes of this last solution to the gold solution and raise to a temperature of 70° to 80° Cent. (= 158° to 176° Fahr.) The dish being then removed from the source of heat, the positives are immersed in it by twos, back to back, 30 to 40 seconds generally sufficing to tone them, after which they are fixed as usual in hyposulphite of soda containing one to two per cent of ammonia.

M. Balagny also showed some reproductions of line work made with his emulsion, to show its adaptability to this sort of work, where strong contrasts and clear glass in the shadows are indispensable.

This "pellicular paper" is so made that the film may be transferred to glass, gelatine sheets, or paper, according to the purpose for which it is to be used. Judging from the high terms in which M. Vidal speaks of it, and of the results obtained with it, it must be a grand success.

M. Bardy exhibited Molteni's enlarging lantern, as recently improved. As a complement to this lantern, M. Bardy also showed a little tourist camera by M. Hutinet. It takes plates 8 cm. square (3⅛ in. nearly), is provided with a rectilinear lens having a revolving shutter permanently attached, and operated by a pneumatic arrangement. M. Hutinet makes a gelatino-chloride plate especially for making transparencies from these small negatives, which give a very fine deposit admirably adapted for enlarging from.

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FEW photographers care to treat an unpromising sitter as Rejlander treated a lady of title who visited his studio. "I will not take her, oh! she is ugly;" exclaimed the artist, as he left the studio, trusting to others to explain matters.

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A WEST of England photographer, with a speciality for baby portraiture, guarantees, not a speaking likeness, but a "crying" one!

Reviews.

PICTURE MAKING BY PHOTOGRAPHY; by H. P. ROBINSON. London: Piper & Carter. New York: Scovill Manufacturing Co.

It is not our intention to attempt a critical review of this book. Although not entirely destitute of the commodity usually called conceit, we are not quite so well supplied with it as that would imply. To those familiar with Mr. Robinson's name and reputation especially those who have read his "Pictorial Effect in Photography" the bare announcement of the title of this, his last contribution to literature, will be sufficient, but as this journal will doubtless fall into the hands of many who are not familiar with the author, some idea of its scope and style may not be unacceptable.

And in the first place, for the information of those who have read "Pictorial Effect," it should be distinctly stated that, notwithstanding the similarity in title, the book under consideration is not by any means a new edition of that work; a small, very small, portion of the subject matter in the earlier work, relating to the rules of composition, etc, has been incorporated in "Picture Making," but by far the greater part of it is entirely new, nor is it intended to supersede "Pictorial Effect," but rather as a continuation thereof, carrying the student another stage in his art education. Moreover, we strongly advise every photographer, amateur or professional, who has not read either of these books, to lose no time in procuring both of them.

But, "let us return to our muttons." "Picture Making by Photography," as might be expected from its title, treats entirely of the art aspect of photography, and contains no technical directions, formulæ, descriptions of apparatus, etc. It presupposes that the reader is already thoroughly posted on all these points, and has mastered the technical difficulties of photography. Its aim is to teach him how to turn this technical knowledge to account in making *pictures*, instead of mere photographs, and this is done in a clear, concise, and yet entertaining manner which seems to be one of Mr. Robinson's special gifts. We quote a part of the preface:

> It has been said of Gibbon, the historian, that he did not always sufficiently distinguish between his own personality and that of the Roman empire. I am afraid that the following chapters may be open to a similar objection. I fear that a great deal more will be found concerning my own personality and productions than a modest writer would willingly admit; but this cannot easily be avoided. The nature of the information to be conveyed, and the lessons to be inculcated, demand that I should teach the results of my own experience, and suggest that the pictures which have been the outcome of that experience would be the most suitable illustrations.
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> It will be evident that pictures which have been actually produced by photography will better show the peculiarities and limitations of the art than any other method of illustration.
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> That photography should be not only the recorder of bald, prosaic fact, but also the means by which something akin to imagination or fancy—real live art—may be worthily embodied has been the one aspiration of my life. To this end my aim has been in the following chapters to induce photographers to think for themselves as artists, to learn to express their artistic thoughts in the grammar of art. It is not the fault of the art of photography itself that more original pictures, exhibiting many of the qualities shown in other arts, are not produced. The materials used by photographers differ only in degree from those employed by the painter and sculptor.

The book is divided into twenty chapters, headed as follows: I. Gelatine Plates and their Uses. II. Our Tools. III. Composition. IV. Light and Shade. V. In the Field. VI. What to photograph. VII. Models. VIII. The Genesis of a Picture. IX. The Origin of Ideas. X. Subjects. XI. Figures in Landscape. XII. An Effect of Light. XIII. Sunshine. XIV. On Sea and Shore. XV. The Sky. XVI. Animals. XVII. Old Clo'. XVIII. Portraiture without a Studio. XIX. Strong and Weak Points of a Picture. XX. Conclusion.

From this synopsis some idea of the scope and arrangement of the work may be obtained.

The book is pretty thoroughly illustrated by small wood-cuts, and embellished with four full page ink photos reduced from large photographs by Mr. Robinson. These last are calculated to inspire in the reader a desire to see the originals.

The first chapter (on gelatine plates) is devoted to an exposition of the advantages the latter confer on the picture-maker, and points out that many subjects may be successfully achieved by their aid that would have been impossible in collodion days. For instance:

> It is now so easy to catch what might be called the accidental beauties of nature. Hitherto, before the tent could be erected and the plate prepared, the cloud that partly covered the landscape and gave a beautiful breadth of light and shade was gone; the figures that gave point and life to the view had moved on, or the wagoner with that picturesque wagon and team of powerful horses could not wait.

It may be noted here, for the benefit of those who maintain that gelatine work is inferior to what was turned out in the "good old collodion days" that Mr. Robinson says, "as for quality the results have never before been approached." In the concluding paragraph of this chapter will be found some good advice: "Find out by trial at home a make of plate that you think will suit you, and keep to it. It is easier to get good pictures with rather inferior plates, if you know them, than with first rate ones of which you have no experience."

In chapter II our author rails a little against heavy and complicated apparatus, and gives a pathetic account of his experiences in the studio of an amateur friend, which was fitted up "with all the modern appliances."

He evidently does not believe in a cone shade attached to the lens.

We must confess, however, that we were a little astonished to read his remarks anent swing backs. Here they are:

> The back should swing *one way only*—that is, so as to give the foreground a better chance of being in focus. I prefer it when it opens much wider than it is usually made to do, say 1¼ inches in a 10x8 camera; this is especially useful in pictures of the sea. The swing the other way, usually employed for correcting the vertical lines of buildings when the lens has to be tilted up (and which camera makers will insist upon your having, whether you want it or not) *is so rarely required as to be practically useless in ordinary cameras*, and only adds to the weight. I cannot call to mind any occasion on which I have wanted this movement; yet I have had to carry it about with me for five and twenty years!

On the subject of instantaneous shutters, Mr. Robinson prefers a simple drop.

In the next chapter, "Composition," we get a brief outline of the laws governing this part of the artist's work, the reader being referred to "Pictorial Effect" for a fuller exposition thereof.

In the chapter on "models," after describing the difficulties in dealing with the natural article, our author says:

> But if fine nature, in the way of natural models, is not to be obtained, art supplies the remedy, as I am now going to show.
>
> I am quite conscious that I am laying myself open to the charge of masquerading, but art is a state of compromises and sacrifices, and I cannot but think that what is lost in absolute unrelenting naturalness when substituting trained models for the newly caught raw nature is compensated for in many ways. Graceful figures, if not over done, give an ideal tinge to the picture that lifts it above the cleverest transcript of mere prosaic fact.
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> My models may be called to some extent artificial, but they are so near the real thing as to be taken for it by the real natives, just as the trout does not seem to know the difference between the natural and the artificial fly. One day two of my models were walking across the park, and a gamekeeper, seeing them for the first time, made after them, shouting in the high tone that sounds like quarreling to the stranger when he first hears it in Wales. As they would not stop he did not hesitate to give way to all he knew in both languages, and did not cease to vituperate till, getting near them, he found to his dismay they were "the daughters of the house." This, I think, shows that our imitation is sufficiently like the original for artistic purposes.
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> My models are trained to strict obedience, and to make no suggestions. If the photographer has really got an idea in his head he had better carry out that idea. Any interference, even from superior intelligence, is sure to go wrong. Some people are wonderfully patient under the application of information, but I confess that I am so peculiarly constituted that the most admirable advice, when I am in the middle of posing a group, quite upsets the ideas I had, and I do not find it possible to adopt those offered. Therefore, from my own experience, I would recommend that if a friend feels the twitchings of sufficient skill to offer advice, you had better allow your candor to exceed your courtesy and order him off at once. * * * It is almost as difficult to get variety in dresses as in persons. I always endeavor to secure a picturesque dress when I see it. It is not always easy to explain what you really mean when you meet a girl in a lonely country lane, and you offer to buy her clothes, but a little perseverance and a good offer generally succeed. A country girl's dress is not often worth more than eighteen pence, and if you turn the pence into shillings and look business-like all the time, you may make pretty sure of walking off with the property, or, at all events, getting it sent to you next day. * * * * *
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> Young children make good models; but you must capture them wild. To ask their mothers if you may have them is fatal. They insist on dressing them in their Sunday-school clothes to "have their pictures took."
>
> Now a dirty country child is often a delightful lump of picturesque humanity; but when it is "washed and dressed all in its best" it is about the most priggish bit of nature I know. It loses all its freedom and becomes stiff and awkward.

In the two following chapters, "The Genesis of a Picture," and "The Origin of Ideas," the author gives a graphic account of the incidents, often trifling in themselves, which suggested the subject and general arrangement of many of his most noted pictures; and in this connection he shows the value of a knowledge of off-hand sketching to a photographer, as he can in this way make hasty pencil notes of the arrangement of a group, the pose of a figure, the salient features of a landscape, etc., etc., which will be of immense value to him in the composition of his pictures. Also, he says that when a certain pose strikes the observer as specially beautiful, or an accidental effect of light and shade as unusually picturesque, he should try to analyze *why* they are so. "This a knowledge of the rules of light and shade and composition will enable you to do, and to do this easily, the student will find an added pleasure to his life, another feather to the wing of his artistic flight."

In chapter X, under the head of "Landscape," we find the following excellent advice:

> There is a good deal of monotony in the subjects chosen by photographers. Nobody seems to have the inclination, or, may be, the power to break out in a fresh place. It is, perhaps, found to be easier to follow the lead of others than to invent for ourselves.
>
> Many subjects are not attempted for fear they should not come out well. They look beautiful in nature, but they do not accord with photographic traditions—they are not like the usual thing. But the photographer should "greatly venture." Don't be afraid of being original. If you have the least glimmering of an idea that you have a new thought, give it a chance—even if it turns out abortive,—for it is not given to everybody to produce a new thing. Don't be afraid if your little bantling of an idea looks different to everything that you have been taught to look upon as orthodox; if there is any real good in it, the strangeness will be part of its merits. A few mechanical defects are easily overlooked, if not applauded.
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> Visitors to exhibitions are as tired of the technical perfections of photography as the Athenians were of hearing Aristides called the Just. Last year I willfully put a considerable portion of a picture out of focus, which could as easily have been taken with perfect definition, and it turned out to be one of the most popular I ever did. But I hope this confession will not lead my young readers astray; it was not the mere fact of part of it being out of focus that made this picture a favorite with the public; the subject was sufficiently interesting to overpower the technical defect. What you should especially endeavor to avoid is the dead level of respectable mediocrity. Sir Walter Scott, in writing to his publisher about one of his poems said, "As for what is popular, and what people like, and so forth, it is all a joke. *Be interesting*, and the only difference will be that people will like it so much the better for the novelty of their feelings towards it. Dullness and tameness are the only irreparable faults."

Chapter XI is devoted to an exposition of the value of figures in landscape, and is illustrated with some woodcuts showing in a forcible manner how the judicious introduction of figures will often make an interesting picture out of a subject that would otherwise seem flat and tame. In the one following we are shown the advantages of working against the light, and so much stress is laid on this, that Mr. Robinson is even willing to accept a certain amount of fog due to direct sunlight entering the lens, rather than sacrifice the relief and striking effects afforded by this method of lighting. His remarks apply to both landscape and portrait work.

In the next chapter we incidentally come across a piece of advice which might with advantage be more followed than it is:

"I may mention that I find it a good plan, when a negative has some radical defect in it, to destroy it at once. If you stop to think you will pursuade yourself to keep, and perhaps print and exhibit a picture which never should have passed the development stage of existence."

For taking negatives on ship-board, especially "yacht board," Mr. Robinson recommends that the camera be mounted on a ball and socket, which will make it nearly independent of the rolling and pitching of the vessel, and also gives some useful hints on "finders" or sights for getting objects in the field of view in instantaneous work.

In "Portraiture without a Studio" the amateur will be encouraged to read that portraits equal to the best gallery work can be made in an ordinary room. "Indeed," says our author, "I have seen portraits and groups taken in a room that were superior to much of what is called 'the best work.'" Our last extract is from the concluding chapter:

> There are other photographers who care for nothing so much as the sharpness of focus shown in their negatives, forgetting that this optical quality is destructive of that natural look which all photographs should have—that open, daylight effect which is the aim of all real artists, whether painters or photographers, to get in their works. I am glad to see that the "pride of focus" is going out of fashion, excessive definition is not now looked upon as the chief glory of the photographer. I object as much as anybody to the sloppy-smudge order of photography, but when I see my way to getting a more atmospheric effect by sacrificing definition, that sacrifice is made without more ado.
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> There are cases in which a picture may be exposed too quickly. quite apart from the question as to whether it was sufficiently exposed photographically. If a moving object is photographed in a shorter space of time than the eye takes to see it, the effect is ridiculous and against nature. Mr. Muybridge has effectually proved this in his curious instantaneous photographs of running horses and other animals, which are shown in positions that have never been seen by mortal eyes. In attempting to prove that artists are scientifically wrong he has shown that they are artistically right I think all artists will admit that there is more life and motion in a picture of waves that shows some slight sign that they were in motion than in the representation of a frozen sea.

The book contains a few typographical, or clerical,—but probably the former—errors, the worst of which is "anacreonism" for "anachronism." None of them, however, are of such a nature as to alter the sense of the text or create any misapprehension on the part of the reader.

In conclusion it may be remarked that this work is published at so low a price—ridiculously low considering its intrinsic value—as to place it within the reach of every one, and we hope it will find a place in the library of every photographer, professional or amateur, employer or employe.

MR. E. C. C. STAMFORD read a paper before the Society of Arts which was full of details most interesting to photographers. The communication was "Upon the Economic Applications of Seaweed"; and the writer dwelt very fully upon the extraction of iodine and bromide, which, as many of our readers are aware, used at one time to be extracted wholly from "kelp," the name given to burnt seaweed—formerly the chief source of the carbonate of soda used in this country. Chloride of potassium was obtained from one variety—that richest in iodine—and was twenty-five pounds per ton. Immense alkaline deposits were discovered on the continent, and the chloride became so plentiful that it dropped quickly to a third of this price. Bromine was then discovered (also in the deposit), and in such quantity that, instead of being able to fetch thirty-eight shillings per pound in the market, it gradually dropped to fifteen pence—its present market price. Iodine is extracted largely now from the caliche of Peru, so that "kelp" is no longer used, either for bromine or iodine extraction, though Mr. Stamford has introduced such improvements that it may be worth while if his suggestions should be carried out to recommence such extraction. Iodine itself has kept a fair average price, twelve shillings being now obtainable, the highest decimal average having been fifteen shillings and elevenpence.—*British Journal of Photography.*

PHOTOGRAPHY AND ASTRONOMY.

BY DAVID GILL, LL. D., F. R. S.

[Extract from a Lecture delivered at the Royal Institution.]

I wish briefly to allude to another engine of research in sidereal astronomy which quite recently has received an enormous development and whose application appears to offer a rich harvest of results. I refer to the application of photography to astronomical observation.

Your respected member, Mr. De la Rue, is the father of this method. Time does no permit me to dwell on his early endeavors and his successful results, but they are well known to you all. He opened up the field, and he cleared the way for his successors.

The recent strides in the chemistry of photography and the production of dry plates of extreme sensibility have permitted the application of the method to objects that formerly could not be photographed. Here, on the screen, are the spectra of stars photographed directly from the stars by Dr. Huggins, the lines which tell of the chemical constitution and temperature of the star's atmosphere being sharply defined.

Here are photographs of the great comet of 1882, which, with the co-operation of Mr. Allis, of Mowbray, I obtained at the Cape, by attaching his ordinary camera to an equatorially-mounted telescope, and with its aid following the comet exactly for more than two hours. Each one of the thousands of points of light that you see is the picture of a fixed star. The photograph suggests the desirability of producing star maps by direct photography from the sky.

Here on the screen is a photograph of the great nebula of Orion, or rather a series of photographs of it, made by Mr. Common, of Ealing. You will note the gradual development of detail by increase of exposure, and the wonderful amount of detail at last arrived at. Here are photographs from drawings of the same, and you will note the discrepancies between them; and here is a photograph of a star cluster, also by Dr. Common.

No hand of man has tampered with these pictures. They have a value on this account which gives them a distinct and separate claim to confidence above any work in which the hand of fallible man has had part.

The standpoint of science is so different from that of art. A picture which is a mere copy of nature, in which we do not recognize somewhat of the soul of the artist, is nothing in an artistic point of view; but in a scientific point of view the more absolutely the individuality of the artist is suppressed, and the more absolutely a rigid representation of nature is obtained, the better.

Here is a volume compiled by one of the most energetic and able of American astronomers—Professor Holden. It contains faithful reproductions of all the available drawings that have been made by astronomers of this wonderful nebula of Orion from the year 1656 to recent times.

If now we were to suppose one hundred years to elapse, and no further observation of the nebula of Orion to be made in the interval; if in some extraordinary way all previous observations were lost, but that astronomers were offered the choice of recovering this photograph of Mr. Common's, or of losing it and preserving all the previous observations of the nebula recorded in Professor Holden's book, how would the choice lie? I venture to say the decision would be—Give us Mr. Common's photograph.

Is it not therefore our duty to commence a systematic photographic record of the present aspect of the heavens? Will not coming generations expect this of us? Does not photography offer the only means by which, so far as we know, man will be able to trace out and follow some of the more slowly-developing phenomena of sidereal astronomy?

Huggins has shown how the stars may be made to trace in significant cipher of their spectra the secrets of their constitution and the story of their history. Common has shown us how the nebulæ and the clusters may be separately photographed, and it is not difficult to see how that process may be applied, not only to special objects, but piece by piece to the whole sky, till we possess a photographic library of each square half-degree of the heavens. But such a work can only be accomplished by consummate instruments, and with a persistent systematic continuity which the unaided amateur is unable to procure and to employ. It is a work that must be taken up and dealt with on a national scale, on lines which Huggins and Common have so well indicated, and which has already been put in a practical form by a proposal of Norman Lockyer's at a recent meeting of the Royal Astronomical Society.

I would that I had the power to urge with due force our duty as a nation in this matter, but my powers are inadequate to the task.

I employ rather the words of Sir John Herschel because no words of mine can equal those of him who was the prose poet of our science, whose glowing language was always as just as it was beautiful, and whose judgment in such matters has never been excelled. They were spoken in the early days of exact sidereal astronomy, when the strongholds of space were but beginning to yield the secret of their dimensions to the untiring labor and skill of Bessel, of Struve, and of Henderson. Think what they would have been *now* when they might have told how Huggins' spectroscope had determined the kinship of the stars with our sun, how it had so far solved the mysteries of the constitution of the nebulæ, and pointed out the means of determining the absolute velocity of the celestial motions in the line of sight. Think what Herschel would have said of those photographs by Common that we have seen to-night, of that nebula that Herschel himself so laboriously studied, and whose mysterious convolutions he had in vain endeavored adequately to portray; and think of the lessons of opportunity and of duty that he would have drawn from such discoveries, as you listen to his words spoken forty-two years ago:—"Such results are among the fairest flowers of civilization. They justify the vast expenditure of time and talent which have led up to them; they justify the language which men of science hold, or ought to hold, when they appeal to the governments of their respective countries for the liberal devotion of the national means in furtherance of the great objects they propose to accomplish. They enable them not only to hold out, but to redeem, their promises when they profess themselves productive laborers in a higher and richer field than that of mere material and physical advantages. It is then, when they become (if I may venture on such a figure without irreverence) the messengers from heaven to earth of such stupendous announcements as must strike every one who hears them with almost awful admiration, that they may claim to be listened to when they repeat in every variety of urgent instance that these are not the last of such announcements which they shall have to communicate; that there are yet behind, to search out and to declare, not only secrets which shall increase the wealth and power of man, but TRUTHS which shall ennoble the age and country in which they are divulged, and, by dilating the intellect, react on the moral character of mankind. Such truths are things quite as worthy of struggles and sacrifices as many of the objects for which nations contend, and exhaust their physical and moral energies and resources. They are gems of real and durable glory in the diadems of princes, and conquests which, while they leave no tears behind them, continue for ever inalienable."

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CUPRAMMONIUM AS A WATER-PROOFING AGENT

The peculiar properties of cuprammonium (or cupro ammonium) have been known to chemists for some time; but it is only within recent years that they have been utilized commercially. There are several substances obtainable by the combination of ammonia with the copper compounds, and though most are very unstable, some are sufficiently tractable to be used in manufacturing processes—the chief of which are based on the power of the cupro-ammonium compounds to apparently dissolve cellulose and similar substances. Dr. John Scoffern was, we believe, the original discoverer of the commercial value of cupro-ammonium; but several patents have been taken out in connection with it, the latest by Dr. Alder Wright for the economical production of that and other analogous metallic solutions. That gentleman read a paper the other day before the Society of Arts, in which he described the chemical constitution and peculiar properties of cuprammonium in connection with a special manufacture, in which it is used for water-proofing and preservative purposes. Salts of copper, as, for instance, the sulphate, usually combine with four proportions of ammonia—*e. g.*, cupro-tetrammonium sulphate, which is obtainable in crystals by simply pouring a concentrated solution of bluestone into a solution of ammonia until a clear deep blue is produced. If the liquid is now shaken with alcohol or treated with considerable quantity of concentrated ammonia solution, the crystallized salt is precipitated. Other salts of the cupro-tetrammonium series are obtained by similar means, and a closely-related compound, possessing, however, rather different properties, is prepared by dissolving cupric hydrate in ammonia solution or by dissolving metallic copper in liquor ammoniæ by agitation in the presence of air, thus obtaining a deep blue liquid, commonly called "copperized ammonia." A solution of this cupro-ammonium hydroxide is decomposed by simple addition of alcohol to its ammoniacal solution, a blue precipitate, essentially consisting of hydrated copper oxide, being thrown down. If the solution is boiled, anhydrous black copper oxide is formed, and ammonia driven off. In presence of a large excess of ammonia, however, the instability is less marked, and the strongly ammoniacal fluids formed by dissolving copper salts or copper hydroxide in a large excess of ammonia water are the cupro-ammonium compounds used for the purpose of waterproofing and preserving paper, cotton wool, and similar materials. It has long been known that cupro ammonium solutions possess the power of apparently dissolving cellulose and various allied substances. It is held, however, by some chemists *e. g.*, Erdmann (*Jour. Prakt. Chem.* lxxvi, 385), that these are not cases of true solution, but that the substances are simply gelatinized and disseminated through the fluid in a transparent form, as starch is in water. On the other hand, on neutralizing the fluid by an acid, or better still, on adding potassium cyanide solution until the blue tint is discharged, the cellulose reappears as a gelatinous precipitate; this result would suggest that the reappearance of the cellulose is brought about by the destruction of the solvent in which it was truly dissolved, viz., the cupro-ammonium compound, by conversion into ammonia and cupro-cyanide (or into ammoniac and cupric salts, if an acid be used). On evaporation to dryness of a cupro-ammonium solution in which cellulose has been dissolved, a more or less gummy mass is formed, containing the cellulose intermixed with copper oxide, and with ammonia and copper salts if a cupro-ammonium salt were used, but containing copper oxide and a green copper derivative or compound of cellulose if cupro-ammonium hydroxide were employed. When the cellulose is in excess, *e. g.*, when the solution is evaporated on the surface of paper, calico, etc., just dipped in the solution, black oxide of copper is often not formed at all; but a green varnish-like mass of cellulose conjoined with copper oxide, or of the copper salt of some feeble acid derived from, and closely akin to cellulose, coats the surface of each filament of the fabric used, welding and cementing them together. This cement-like cupro-cellulose, as it may be termed, being insoluble in water, communicates water-resisting properties to the material so treated; moreover, the presence of copper renders the dipped and dried substance less prone than before to the attacks of insects and mould, so that animal and vegetable life of a parasitic nature and fungoid growths are rarely, if ever, to be observed in the substances, even when kept under conditions where boring worms, ants, rot, and mould would be likely to attack them.

To produce the best results in this direction, solution of cupro-ammonium hydroxide is, for many reasons, preferable to solutions containing cupro-ammonium salts; not only is the action on cellulose more energetic for a given amount of copper and ammonia in solution, but various other advantages are gained. For example, if ammoniacal solution of cupro-ammonium sulphate be used, the dried fabrics so treated will contain ammonium sulphate, and sometimes copper sulphate, soluble in water, rendering the material porous if exposed to the action of water in sufficient quantity to dissolve out the soluble matters, and causing more or less tendency to unsightly efflorescence under other conditions. Further, during the drying of materials treated with cupro-ammonium hydroxide solution, all the ammonia present is volatilized, and may be recovered by appropriate means; whereas, with cupro-ammonium sulphate solution, a considerable fraction of the ammonia is fixed in the fabric as sulphate, and so lost.

A peculiar property of cupro-ammonium solutions, and one most important from the manufacturing point of view, is that whereas iron is, as is well known, attacked and dissolved by solutions of ordinary copper salts (*e g.*, the sulphate), an equivalent quantity of copper being precipitated during the operation, no such action is observable with cupro-ammonium hydrate solutions; so that cast and wrought-iron tanks and baths for the reception of the liquor may be used with impunity, as may steel rollers and machinery of all kinds when employed in contact with the liquor, or with fabrics moistened therewith. On the other hand, copper and brass must be studiously avoided in the construction of such appliances, otherwise corrosion and injury are speedily brought about. This peculiarity, as regards the non-action of iron and steel, is the more remarkable in that it is not observed with zinc: this latter metal precipitating copper (and being itself dissolved) with about equal facility, whether the copper be in the form of an ordinary copper salt, or in that of a cupro ammonium solution.

For certain purposes, a bath containing a mixture of cupro-ammonium and the analogous zinc-ammonium hydroxide solutions may be used with advantage; the zinc compound does not of itself sufficiently pectise cellulose to give good results, but when used in conjunction with cupro-ammonia hydroxide, pectising is brought about by the copper solution, whilst certain advantages are gained by the simultaneous presence of zinco-cellulose and cupro-cellulose in the finished goods. The fluids are obtained by the simultaneous action of air and ammonia water on metallic copper (or brass, if a mixture of cupro and zinco-ammonium hydroxides is required), due attention being paid to the recovery of the large amount of ammonia necessarily carried away by the "spent" air during the operation.—*English Mechanic and World of Science.*

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SOUND VIBRATIONS PHOTOGRAPHED.

Photography appears to be running a race with electricity in curious developments and novel applications. Geo. G. Rockwood, the well-known photographer, has just achieved the remarkable feat of photographing sound waves instantaneously. The instrument by which the sound wave was represented, or made visible in its effect, is a new telephone, the inventor of which has obtained from Mr. Rockwood a perfect ocular demonstration of its vocal repeating action. The vibrating diaphragm, upon which the voice is projected, has a fine metallic point mounted on the center of its reverse side. This point meets the pointed end of a conducting wire so nearly that when at rest the interval between the two points can be discovered only through a strong lens. The thing to be done was to show in a picture of the instrument, or rather in a series of pictures, the alternate contact and separation of the points from the vibrations imparted to the diaphragm by the voice, involving the closing and opening of the electrical circuit and the consequent reproduction of the same rate of vibration in the receiving instrument at the other end of the line. In considering this problem, Mr. Rockwood found himself indebted to his recollection of an experiment by Herschel in photographing (or daguerreotyping) with the electric spark. Herschel caused a four-sided prism of wood, around which a picture was pasted, to revolve at high speed as in a turning lathe. By illuminating this revolving picture with the electric spark (in total darkness otherwise) he obtained a photograph of it as standing still at that instant in its revolution when the spark flashed. In describing his experiment, Mr. Rockwood said;

"Wheatstone measured the duration of the electric spark as 1-24,000th of a second. It would follow that any vibration not quicker than this might be arrested on the photographic plate at any point in its travel. Whereas, according to the investigations of Plateau, the duration of successive impressions on the human eye will average half a second, the electric spark might separate and distinguish photographically waves of which 12,000 impinge on the retina while the first of them is still lingering there; in other words, 12,000 practically all at once. Now, the vibrations or waves of air that yield the respective tones or pitches of sound have been accurately measured and counted. Assuming the pitch of the ordinary masculine voice in conversation to be as low as middle C, the number of complete double vibrations imparted by such a voice to the telephonic diaphragm or tympanum would be 256 per second—that is, counting both ways, 512 movements of the diaphragm with its metallic point making or breaking the electrical circuit at each movement. To the eye, which retains every impression for half a second, 256 of these movements would make their impression as one, and would give a stationary, fictitious image, if they were of sufficient depth to produce any visible effect whatever, as they are not. The electric spark, however, would give its illumination and do its photographic work within a little more than 1-50th of the time of one of the tympanum movements. A succession of such photographs, therefore, would present fortuitously any position of the vibrating point from that of contact to that of extreme retraction, with an indefinite number of intermediate positions."

To verify these calculations, Mr. Rockwood carefully focused his photographic camera on the points of the telephone by daylight, and a battery of Leyden jars was so adjusted that when discharged it would throw the proper illumination on the points. Mr. Rockwood's instantaneous plates were now to be tested under action five hundred times quicker than a sensible instant, and also invisibly minute. Of course it was as yet a practical question whether they could effectively receive as quickly as the electric spark would give this infinitesimal action of light. Waiting until the darkest hour of the night, the plate was uncovered in total darkness, the telephonist began speaking into his instrument, and the illuminating spark was flashed upon the points. This operation was repeated with more than twenty plates in succession The resulting negatives, on being developed, proved a triumph in two arts and a science. The photographs printed from them showed under the glass, in some, contact of the points, and in others a variety of infinitesimally differenced intervals between them. Not one of the impressions had more than the 1-24,000th of a second to be begun and ended.—*Exchange.*

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PHOTOGRAPHING A YACHT RACE.

ABOUT ten members of the Chicago Photographic Association and Amateur Club chartered the cutter yacht "Anon" on Saturday last for the purpose of photographing the yacht race. They "headed off" the boats on their outward run, obtaining "snap shots" at each of the vessels engaged in the race, and then endeavored to intercept them again at the second stake boat, but failed to make it, so returned to the government breakwater and landed to await the yachts on the "home stretch," when they were again photographed. The schooner yacht "Idler" which was out on a cruise, was also made a victim on two occasions. The weather was exceptionally favorable for a photographic expedition of this kind, but for yachting a little more wind would have been an advantage. At the time of writing we have only seen results obtained by three of the amateurs, Dr. Garrison, Profs. Burnham and Hough, all of whom had fair success. We have interviewed another member of the expedition, whose results may be represented by the cabalistic 0.

The Influence of a Lens Sunshade.

It is always a safe practice to prevent, by means of a suitable hood, any more light from falling upon a lens than that which comes from the subject to the reproduction of which the photograph is to be confined. Anything beyond this is of no utility, and, under certain circumstances, may prove mischievous.

It cannot have escaped the notice of our readers that whereas in front of some lenses the mount projects so far as to form quite a deep hood, in others the lenses are brought up to the end of the tube in which they are contained, and no more of the tube remains projecting than is barely sufficient to shield the convex surface of the glass, and protect it from being scratched if laid down upon its end. Now, in such a case as this, it follows that the lens is totally devoid of the protecting agency of the hood as a sunshade, by which is here understood any means to screen the lens from a bright sky.

Having observed on one occasion that two negatives of the same subject—the lens in one case having been carefully screened, while in the other it was not—were alike equal in brilliancy, we have been led to bestow some attention upon the subject of the uses of sunshades.

The function of the hood, in addition to its forming a place for the cap, is to prevent more light from entering the lens than is requisite in forming the picture. There is an idea prevalent that if the light from the sky strike the lens it will, in some measure, tend to fog the photograph. In ascertaining the precise degree of truth contained in this surmise it is necessary to take an extreme case, and we have done so by directing the camera toward a view possessing an abundance of deep shadows as well as high lights, removing, for the purpose of our experiment, the hood of the lens and permitting the direct rays of the sun to fall upon its surface. The lens employed upon the occasion to which we here refer was one of the well-known "rapid" type. This, it will be admitted, was, indeed, an extreme case.

Having first of all attached to the front of the lens a movable skyshade, which was "set" in such a manner as to cut off all that was not intended to be included in the photograph, we examined the image on the ground glass. While engaged in doing this a friend, by arrangement, turned up the skyshade so as to permit a beam of direct sunlight to fall upon the lens. There was a slightly appreciable increase in the illumination of the foreground shadows, showing that the direct sunlight upon the front lens had exercised some degree of agency of an adverse character. To ascertain the immediate cause of this increase in illumination, the ground glass was removed and the appearance of the lens observed, when the eye was placed in the line of light reflected from the lens. The impact of the solar beam did not appear to affect the instrument itself in the slightest degree; neither was there any reflection from the edge of the lens, which was not only well blackened with varnish, but had an annulus of blackened brass inserted in the cell, so as to cover up the margin of the lens completely. But from the fixed central stop in the lens, composed of an unnecessarily thick pair of plates of brass, and upon the edge of which the solar beams impinged, there was a reflection of a decided description, and it was this that caused the illumination of the shadows of which we have spoken.

When the lens had been unscrewed from the camera and special precautions taken to prevent this reflection from the edge of the fixed stop, by painting the brasswork with a very deep, non-reflective black varnish, the cure of the evil was effected. There was then no difference perceptible between two negatives, one of which was taken with the lens entirely shielded from the sun's rays, the other with the rays allowed to enter obliquely as already described. Of course, in no case was the light of the sun permitted to pass through the lens on to the plate; all we aimed at was to secure its transmission at an angle so oblique as only to impinge upon and illuminate the sides of the mount.

The whole of the evil attributable to the impact of strong light upon the anterior surface of a lens such as we have been speaking of is not caused by any internal or other reflection of an optical nature, but arises solely from the mount. To demonstrate this we arranged a lens in relation to the direct solar rays, so as to give the maximum of reflection or flare. Then, without disturbing the camera, we unscrewed both lenses from the mount, which we replaced by two boards that might be represented by the top and bottom of a cigar-box, and, in truth, formed the arrangement in this case. Here, then, we had the lenses separated from each other to the same extent as in the original mount. They were inserted in apertures made in the top and bottom of the box directly opposite each other, without the slightest chance of any reflection being caused from the sides of the box. In this experiment, no matter to what extent or at what angle the sun's rays were permitted to fall upon the front lens—so long as they were not permitted to have access to the second— none of such rays seemed to have the slightest influence upon the image on the ground glass, which was quite bright and sharp, no matter whether the solar rays fell upon the anterior lens or were prevented from so doing.

There are, however, circumstances in which this immunity from fogging will not be secured. Unless the anterior lens be not only polished in a most perfect manner, but is also quite clean at the time of the trial, it will become not alone a transmitter of light but a radiant that diffuses in every direction, in a greater or less degree, the light falling upon the surface. It is under these circumstances that fogging is induced by the impact of light upon the front surface of a combination.

From what has been said it follows that if a lens be well polished and properly mounted, there exists no necessity whatever for having a prolongation of its mount in front; for a hood does not in the slightest measure diminish the chances of fogging when the sky is bright, or the direct rays of the sun are absorbed by the anterior element of the combination.—*British Journal of Photography.*

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WILLESDEN PAPER.

We have just received a lot of samples of this article, in various thicknesses, and adapted for various uses. It is manufactured by the Patent Waterproof Paper & Canvas Co, Willesden Junction, Middlesex, England, and we believe has not yet been introduced into this country, but can hardly fail to come into extensive use as soon as its advantages become recognized. It is made, apparently, of stock closely resembling "tar board," the surfaces of which are rendered waterproof, rot proof and vermin proof by treatment with an ammoniacal solution of copper called "cuprammonium." For an account of this solution, its preparation, and method of application we refer the reader to the article on page 140, which we reprint from the *English Mechanic.* The paper is made in three thicknesses—one, two, and four ply—and usually in widths of 27 or 54 inches. Its principal uses are for roofing, the four-ply being the proper weight for this purpose, and can be laid on the rafters direct, without the intervention of boarding. For lining walls and under floors, as a damp-proof and wind-proof course, for covering temporary frame buildings, in place of boards, for lining packing cases as a protection against damp, etc. For temporary or portable photograph galleries it seems to be just the thing, as a light wooden framework can be covered with this paper, sides, ends and roof. It is much lighter than boarding, besides being water and weather proof. It can be readily repaired without skilled labor. Structures covered with this material have been standing exposed to all sorts of weather for seven years, without apparent injury. It has been suggested in the English journals that it would be a good material for photographic trays, etc., and it was principally with a view to investigating this part of the subject that we sent for samples; but none of the samples received seem to be exactly adapted for this purpose. One sample of two-ply, however, looks tolerably promising for small trays, but would not be stiff enough unless supported by a wooden outside case, for those of large or even medium size. How the material would stand the various solutions of general use in photographic operations, is a point on which we have no definite information. The paper samples were accompanied by others of canvas similarly treated, and rendered substantially or entirely waterproof, according to texture; these can be used in place of tarpaulins, rubber cloth, etc.

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THE *Eye* says: "Bring along a nice light linen suit with you to Cincinnati, as very probably you will greatly stand in need of it." Probably.

A PHOTOGRAPHIC TRIP UP THE HUDSON.

Amateur photography has become so universal an accomplishment among young people who spend their summers out of town and wish to reproduce their whilom dwelling places and the scenes of interest about them, for future amusement, that a society was formed three months ago, called the Society of Amateur Photographers of New York. Its object is the encouragement of the art, and the intention of the members is to get views during the summer which they will reproduce with a magic lantern for winter entertainment.

Last evening the society held a meeting, at which views were exhibited that were taken along the Hudson by members on a recent trip. The amateurs who made the excursion were F. C. Beach, the president of the society; H. J. Newton, James B. Metcalfe, Gilbert A. Robertson, Joseph S. Embrich, Jacques M. Embrich, C. W. Dean, Peter Grant, Peter Grant, Jr., and William Chamberlain. They were the guests of Dr. P. H. Mason, of Peekskill, on the steam yacht Zephyr, and the trip was from that village to West Point. Up the river the artists sailed, popping away with their cameras at every yacht, rowboat or steamer that they met or passed, and obtaining by the process of instantaneous photography, scores of beautiful pictures of river scenes, with the grand hills and palisades for a background. One of the best of the photographs was a view of Dunderberg Mountain, opposite Peekskill. Mr. Beach had a scene from a Peekskill churchyard, with the old church where George Washington is alleged to have worshiped, and a few tombstones in the foreground. Several of the artists had caught views of the C. Vibbard, with a load of passengers, steaming up the river. There were good views of Iona Island, and of a pretty yacht lying at anchor in the shadow of old Dunderberg. "Flirtation Walk" and other scenes at West Point were exhibited, and 94 photographs in all were taken. Afterward some practical experiments in the development of gelatine plates were made. The society contemplates another trip up the Hudson very soon.—*N. Y. Times.*

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FEW people are unacquainted with the difficulty and trouble attendant upon the want of adhesion of labels to metal and to glass bottles where exposed to variety of temperatures; hence any new mode of meeting the difficulty will be useful. For glass bottles a solution of chrome alum and gelatine is, perhaps, as good a damp-resisting mountant as any. Metal always presents difficulty, especially when exposed to damp; but, according to a foreign contemporary, it can be overcome by the use of albumen for the purpose. White of egg well beaten up is diluted with its own bulk of water and applied with a brush to the surface to be united; and then, before it is dry, a hot iron is passed over the paper so as to coagulate the albumen. It is also suggested that, by means of successive layers of paper and albumen, waterproof boxes, &c., may be formed.—*British Journal of Photography.*

PHOTOGRAPHY.

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ACCORDING to Obernetter, emulsions made with soft gelatine yield finer negatives than those made from hard samples. The natural deduction is, use as soft a gelatine as the circumstances under which you are working will permit. Thus a harder gelatine must be used in summer than in winter. For general use, he recommends Heinrich's, with a proportion of Simeons' in hot weather.

From the same authority we learn that if the most sensitive plates are desired, the silver nitrate must be free from the least trace of acid—fused nitrate is recommended—and should be dissolved in distilled water. For all the other operations of making and washing the emulsion, any water fit for drinking purposes may be used.

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M. SCOLIK, in the *Photo Correspondenz*, relates some experiments in the development of over-exposed negatives.

He obtained first the correct exposure for a certain plate under certain conditions and developed with the normal oxalate developer. This he found to be three seconds. Prolonging this exposure to two minutes, and developing as before, he found, of course, that he got no image at all, only a general blackness all over the plate. Exposing another plate the same length of time (two minutes) he laid it for a minute and a half in a bath of bromide of potassium, 10 per cent, then, without washing, developed it in the ordinary oxalate developer to which had been added six drops of a 50 per cent solution of citric acid Quantity of developer to which this was added not stated. He obtained a negative almost irreproachable.

◆

DR. VOGEL, in the *Notizen*, considers bichloride of mercury and ammonia the best method of intensification for gelatine negatives, and attributes the want of permanency so often complained of in negatives so treated to insufficient washing. Not only must the hypo be thoroughly eliminated before treatment with mercury, which is now pretty well understood, but after the bleaching in the mercury bath he considers the plate should be washed at least half an hour, in order to remove every trace of the latter salt before it comes in contact with the ammonia.

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WE think we are fairly within the mark in saying that nine-tenths of the negatives now made by amateurs in this country are on plates not exceeding 4¼×5½, and that the great majority are on 4×5. The question naturally suggests itself, of what use are these small pictures? The 4×5 is very little larger than the "artistic" size of stereograph, and we are in little fear of contradiction, when we advance the statement that a stereoscopic picture out of the stereoscope is one of the most useless things imaginable. But the stereoscope is now out of fashion (more's the pity), and even were it otherwise, negatives for it cannot be made on a 4×5 plate. What, then, is to be done with them? It would hardly be safe, perhaps, to say that contact prints from them do not pay, in satisfaction, for the trouble of making, if we were not supported in this view by such excellent authorities as M. Carey Lea, H P. Robinson, and others, "too numerous to mention." To the modern amateur, however, most of these names are as little known as those of ancient history.

For direct printing the 5×7 is the smallest size that really pays for the trouble of making. Carey Lea, we think, deprecates anything smaller than 6½×8½.

What, then, is to be done with these 4×5 negatives?

They are just the size to make lantern slides from, either by contact or in the camera, allowing a good margin in the former case; yet very few amateurs make such slides, although it is a very simple matter. Again, they are well adapted, if sufficiently sharp and brilliant, for making enlargements by means of a lantern on gelatino-bromide paper, or, through the medium of a contact transparency, an enlarged negative on paper or glass.

We strongly urge our amateur readers to turn their attention to one or other of these processes, —*i. e.* lantern slides or enlargements,—and we are inclined to think that very satisfactory results can be obtained by making enlarged negatives on the thin gelatino-bromide paper, and printing therefrom on albumen paper. A good deal of attention is being devoted just now to the subject of making enlargements from negatives, both in England and France, but especially in the latter country, and there is no doubt that very good results can be obtained in this way. Of course a first-rate negative is necessary, and some little experience will be required before entire success is achieved, but many of our amateurs are already making such negatives, and as to the time devoted to mastering the difficulties of the enlarging process, they will find the ultimate results far more than repay them. A single print 12×15, if really good, is worth a hundred 4×5.

It is our intention to experiment in this direction as soon as sufficient leisure presents itself, and to give our readers the benefit of our experience; meanwhile, we shall be pleased to hear from any who have already done so, and especially to receive specimens of work and details of the methods employed in their production.

MR. H. P. ROBINSON and the *Conferencier* at the late session of the Chambre Syndicale do not seem to hold exactly the same views on the subject of the value to artists of Mr. Muybridge's famous photographs of animals in motion. Both are agreed that the conventional attitude of a galloping horse, as depicted by artists from time immemorial, is scientifically wrong; but the latter holds that the painters should change their time-honored custom in accordance with the teachings of these wonderful instantaneous photographs—with a sort of conventional rendering—although he admits that the actual position of a horse's legs, when all four feet are clear of the ground, is not exactly graceful—while the former says (see *Picture Making*):

"The effect is ridiculous and against nature. Mr. Muybridge has effectually proved this by his curious instantaneous photographs of running horses, which are shown in positions that have never been seen by mortal eyes. In attempting to prove that artists are scientifically wrong, he has shown that they are artistically right."

The *Conferencier* urges, as one of the special advantages of photography to artists, that, being free from the phenomenon of "persistence of vision" it can see objects in motion so much more distinctly, instancing the wheel of a vehicle in motion, whose spokes are invisible to the eye, but are rendered sharply by an instantaneous photograph. We gather from this that he wants artists to paint wheels in motion as the photograph shows them, but there is some little obscurity on this point.

Mr. Robinson, on the other hand, objects to all instantaneous photographs of waves and other moving objects made in a much less space of time than the eye takes to see the same objects, on the ground that they, so far from better conveying the idea of motion, give a petrified aspect to the scene, looking, in the case of waves, as though they were frozen solid. Our readers will readily realize what he means if they will recall the effect on the eye of a carriage wheel in rapid motion illuminated by a flash of lightning.

When artists disagree, etc., etc. For ourselves, we own to a strong leaning toward Mr. Robinson's side of the question.

IN an editorial on "Extremely small Diaphragms" in the *Photographic News* of June 20, the opinion is expressed that the flatness of image resulting from the use of a very small stop would be less observable with gelatine plates than with wet collodion, for the reason that the former tend to give a flatter image in any case.

While there may be something in this view of the case, yet it appears to us that another factor will at least neutralize this; viz., the superior sensitiveness of the gelatine plate to any diffused light that may find its way into the camera; and it is probably impossible to entirely exclude this.

* * *

IN Capt. Abney's letter on the same subject and in the same number of the *News*, we read as follows:

> "The next question is as to the brilliancy of the image. This really depends on the answer to the question whether intensity of light and time of exposure are interchangeable. That is, supposing, with an intensity of light 1, and exposure 1, do you get the same density of developed image as with intensity of light $^1/_{100}$ and exposure 100? This is, perhaps, a debatable point, but our answer to such a question is that such would not be the case. The increase of exposure would not make up for the diminished intensity. Again, you have only two intensities of light to deal with, which are as 100 to 1.
>
> If you take one aperture to the lens, you will get a different contrast in density to that which would be obtained by using only (say) $^1/_{40}$ part of such an aperture, though the exposure was proportionally prolonged."

The question of large *vs.* small stops in outdoor work has always been a vexed one; but we believe it will be a pretty safe rule to follow always to use as large a one as will give the necessary definition.

* * *

WE had supposed that there was good reason for complaint as to the "ways that are dark and tricks that are vain," of the United States post-office department, but from an editorial in the last number of the *British Journal* there would seem to be even more to grumble about in the case of her Britannic Majesty's P. O. D. The matter that is raising the "rumpus" just now is the transmission of cabinet photographs by mail. It may be necessary here to remark that the cabinet has only very lately found favor in England, the card size having maintained its popularity much longer there than here. Now the comparatively small cards passed through the ordeal of Her Majesty's mails without damage, as a general thing, and without any special precautions, their small size being their protection; but the case is different with the larger cabinets, which come to hand broken, doubled up, scraped and generally demoralized. So many complaints had been made to the photographic press that the *British Journal* undertook to investigate the matter, with the result that the damage is traceable to the practice of "picking up" and "dropping" the mail bags at stations where the mail trains do not stop, no "slacking up" being ever done for this purpose.

There are many roadside stations on our trunk lines in this country where the mail is exchanged without stopping the train, but we believe in most cases a "slack up" is made. The mechanical arrangements here are different, being in fact much cruder than those adopted on the "other side," and it is customary to mail cabinets without any special precautions. What proportion of them come to hand uninjured? Possibly the American citizen takes the damage as a part of the price to be paid for the privilege of living in a free country, while his British cousin exercises his traditional privilege of grumbling.

* * *

INCANDESCENT LAMPS AND ACCUMULATORS IN PHOTO-MICROGRAPHY.

BY FREDRICK W. MERCER, M. D., F. R. M. S.

It is but a short time since small incandescent lamps were applied to the microscope, and during this somewhat brief period the matter has received attention at the hands of a few investigators. Dr. Van Huerck, of Antwerp, was probably the first to employ incandescent lamps in this way, but they were of large size and required elaborate battery power. Mr. C. H. Stearn, F. R. M. S., of London, originated small lamps especially adapted to this purpose, and which required a low battery power for their service. Dr. Theo. Stein, of Germany, has, in an article in *Zeitschriff für Wiss Mikroskopie,* just published, described lamps and apparatus similar to those by Mr. Stearn, in the Journal of the Royal Microscopical Society, 1883.

Next to sunlight, the electric light is the best illuminator for photo-micrography; this assertion can be made upon the mere character of the light, but when we consider that it can be utilized day or night, in cloudy or clear weather, it gives advantages placing it nearly upon a par with sunlight itself. There are of course certain difficulties in the way of its general use, chiefly trouble and expense. Those, however, having some time and mechanical aptitude may construct a good part of the necessary apparatus for the production of the light.

The lamps are not impossible of construction by an amateur, but as they may now be obtained at reasonable cost, it would not be well to attempt their manufacture from considerations of economy.

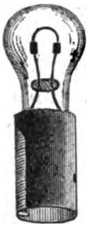

FIG. 1.

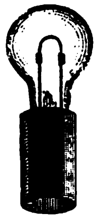

FIG. 2.

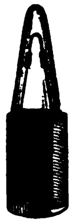

FIG. 3.

In figures 2 and 3 are shown lamps made by Mawson & Swan, at Newcastle-on-Tyne. The drawing has been made nearly to exact size. The stems are of vulcanite, and contact for current is made by two slips of brass fastened to two sides of the stem; these metal strips make contact with the poles of the battery when the lamp has been pressed into its socket, which is simple in form and easily applied as an adapter to the sub-stage or in place of the mirror, at the extremity of the mirror-bar. Fig. 3 is intended for use in the sub-stage, and may be carried close up, almost to contact with the under surface of the object-slide. This lamp is of about $^3/_4$-candle power. The lamp at Fig. 2, pressed to full incandescence, gives a light equal to nearly two candles. These lamps have a low resistance and can be fully lighted by three large Bunsen cells. Four Leclanché cells fail to give as good results. The lamp shown in Fig. 1 was made by the Edison Company, is a little larger than the Swan, has a higher resistance, and therefore requires more battery power; it is, however, very satisfactory in work and gives a little more light than that indicated as Fig. 2. The best means of illuminating these lamps is by a small and very portable accumulator made on the Faure principle. It consists of a $^3/_4$-inch thick wooden box 12 inches long, 6 inches wide and 7 inches deep, outside measure. A partition divides it in the centre, forming two cells. The joints of the box should be halved into each other and well smeared with Canada balsam in benzol, before closing. When completed, the interior of the cells should receive four or five coats of thick asphaltum varnish, each coat being allowed to dry before applying another.

The lead plates for use in these cells should be $6 \times 4^1/_2$ inches, of the form shown in Fig. 4, which has proved, after trying a variety of patterns, the best. The plate is made by casting in a mold, a pattern of wood having been made for that purpose. The edges and ears, A B, should be about $^3/_{16}$-inch thick; the surface of the plate, excepting a $^1/_4$ inch of the edge all around, should be less than $^1/_8$-inch thick; this surface is pierced by holes $^5/_{16}$-inch in diameter and about the same distance apart. The ear or tag A, is for connecting the plates electrically by means of a metal rod passed through the hole, a boss of lead $^3/_8$-inch, formed of small lead pipe, inserted between to keep each plate apart, the whole, say eight negative or positive plates, being thus secured by means of a nut at the end of the rod. The smaller ear, B, is to secure the plate to the battery cover, through which it passes, the weight being carried by a small wooden peg passed through the hole.

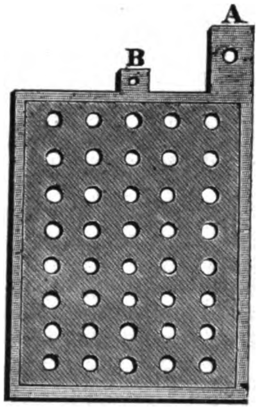

FIG. 4.

The sixteen plates, eight for each cell, four — four +, are in this way secured to the cover $^3/_8$-inch apart and held half an inch clear of the bottom of the cell, to prevent short circuit through deposits formed. Plates that rest upon any portion of the bottom of the cell, or which may be connected up by means of copper wire, no matter how well protected, must prove unsatisfactory, and at last fail. The plate and its connection should be in one piece, as shown in the ear A. The holes in the lead plates, excepting those in the ears, are to be filled with a paste made of the best red lead and dilute sulphuric acid, two to five. As soon as this paste has set in the holes the battery is ready for forming, which is done by passing reversed currents from a dynamo machine for a few days, reversing the current two or three times each day. The solution for immersing the plates should be about one of sulphuric acid to ten or twelve of water. This storage battery, once formed, can be charged or reinforced from four large Bunsen cells. Such an accumulator has positive advantages over any form of primary battery. It is small and portable, can be carried by one hand, may be taken from point to point by any conveyance. The escape of formed gas is slight and non-irritating; no offensive odors; its current is absolutely steady. The capacity for work may be stated to be a good white light from the larger lamp for a period of about three consecutive hours. This does not exhaust the charge, for the lamp can be kept at a red heat for four hours more.

In charging the battery it should not be pushed to its utmost capacity; when the plates become heated and much gas is evolved, the charge should be more slowly passed in, and the battery tested by one of the lamps for charge. In charging more than one cell they should be arranged in series and in arc, on the same principle as ordinary primary cells.

The battery should be kept clean by occasionally washing the plates under a gentle stream from the top, the cells being thoroughly washed out. If out of use for a week or longer, the cells should be emptied and the parts washed.

In photo-micrography the lamp may be used direct—that is, without the intervention of condensers of any kind. Indeed this may be considered a rule for all powers below $^1/_6$-inch. When used direct, the lamp should be carried pretty close to the object, a diaphragm being necessary to cut off all extraneous light. Unless the lamp has been so constructed as to bring the arch of the carbon loop at about the center of convexity of the glass enclosing it, its direct use will not prove satisfactory; or the globe of the lamp may be flattened on two sides and aberration thus avoided. When using higher powers, the interposition of achromatic condensers will be desirable.

In photography the incandescence must be pushed to a clear white light, otherwise failure must attend every effort. The time required is a little longer than that for sunlight, the actinic power of the electric light not being as high, though the latter may give just as bright and sharp an image upon the focusing screen. In using the lamp it is well to insert resistance in some form between the lamp and the source of energy, as the lamp may be at once destroyed through carelessly connecting it up with an unknown amount of energy. I have seen a lamp instantly burnt out by two Stöhrer medical cells, though a moment after these same two cells were so exhausted as to be unable to give sufficient current to heat the carbon film to dull redness.

The form of resistance may be either that afforded by a few feet of fine insulated wire, or by the very portable adjustable resistance coil made by Mawson & Swan. Compared with lamplight, electricity gives an intense white light having greater actinic power, consequently much shorter exposures are required. The light can be carried close up to the object or condensers, giving advantages in sharpness of image and resolution of detail not possible by means of lamplight.

In conclusion: The accumulator will be found useful in many directions, as by means of a coil of small copper wire, the stage of the microscope can be kept at an even temperature for many hours—ten or more; and it will, with lamp Fig. 1, give excellent results in printing transparencies.

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PROFESSIONAL VS. AMATEUR.

In an article under the above heading, which appeared some time ago in the *British Journal*, and was reprinted in our first number, we find the following:

> "It will not do to say that amateurs of this kind are not meant—that the amateur who buys a small apparatus and a good supply of chemicals and goes about taking his friends' portraits in every direction, is the class which is objected to—for to imply this would be making things still worse, and would be tantamount to saying that 'We will not murmur at those people photographing without pay or reward, who are likely to invent something new that may turn to our benefit; but we don't want any one to come photographing if we are not to gain by it.'
>
> We appeal to the broader minded, whom we really believe form a larger portion of our readers, if we have not rightly stated the way in which many professional photographers speak."

We were forcibly reminded of the above remarks by a conversation which we overheard some two or three weeks since. The speakers were two well-known Chicago amateurs,—scientific men, one of whom is known as a careful experimentalist, and the inventor of several improvements in photographic apparatus—and two professionals, one a landscape man, the other a portraitist whose connection with the art-science dates back to daguerreotype days.

The last mentioned gentleman,—whom, for convenience, we will style Mr. Corridor,—we had always supposed to be a man of tolerably libera views, and he somewhat astonished us by the narrowness of those expressed by him on this occasion.

One of the amateurs had said something about the indebtedness of professionals to amateurs for the amount of time, and in many cases money, expended by the latter in experiments, of which the former reap the greatest benefit, and observed that, if his professional brethren only recognized this fact, they would feel more cordial toward the amateur element. "That is all true enough," replied Mr. Corridor, "it is not amateurs like yourself, Professor, that we object to; but there is a class of amateurs who do us considerable injury. Now, I will relate an incident by way of illustration. The other day I met an amateur photographer who told me that on last Sunday he made some twelve dollars by taking groups in one of the parks, all in about two hours, and that he had engagements for similar work on the 4th of July, which would yield nearly double that amount. That, gentlemen, is where the shoe pinches."

The "Professor" replied to this by the statement that the photographer in question, by the mere fact of making pictures for a pecuniary consideration, became a professional, and therefore, removed from the subject of debate. But, without entering into any hair-splitting as to where the amateur ends and the professional begins, let us examine Mr. Corridor's grievance a little.

We happen to be acquainted with the culprit in this particular instance (although no names were mentioned in the above conversation), and, strictly speaking, we do not think he should be classed as an amateur, although he comes within the limits prescribed by the constitution of the Chicago Amateur Club for active members. But, for the sake of argument, consider him an amateur. In that capacity he spends a good deal of money for dry-plates and chemicals, probably more than many small galleries, and if an opportunity to recover some part of that expense obtrudes itself on his attention—well, in plain English, we think he would be a fool not to take advantage of it. Now, he goes to the park on a Sunday morning in summer, with the intention of obtaining some views; while thus engaged a number of idlers pester him to make a group; to comply is the easiest way to get rid of them, and of course the "sitters" all want copies and pay his price without grumbling. That price we happen to know is as high as the ruling price for pictures of the same size in our city galleries, whereas in the latter case the negatives have to be retouched, while our *quasi* amateur friend prints from the untouched negatives. Further, these same parties, or others, beg the operator to make some other groups for them on another occasion, and he good-naturedly complies—to the satisfaction of his clients and the enrichment of his own pocket book. Now, we would respectfully ask Mr. Corridor, and others of that ilk, in what way the professional photographer is damaged by all this? The first answer will doubtless be that it takes "bread out of the mouth" of the latter. In what way? The only reason that the amateur (we are now using this term merely as a means of convenient distinction, without reference to its strict applicability) gets this work at all, is simply that the professional *won't do it.* He will sit all day in his gallery waiting for the sitters that don't come, but it is beneath his dignity to go abroad and look for them. We do not wish to be understood as advocating that he should do so; but the whole business forcibly recalls the old nursery fable of the dog in the manger, who neither could, nor would eat the hay himself, but was determined to prevent the horse from doing so.

Thus cornered, our adversary will probably say that the amateur, by taking people's pictures out of doors, prevents them going to the galleries. This, however, is a miserable subterfuge; he knows better. *They would not go there anyway;* they want out-door groups, and, if they should be disposed to have single pictures made by a "regular," they are not likely to be deterred from so doing by these rural experiences, but rather the reverse.

It will be argued no doubt, that there is "no money" in this kind of work, therefore it would not pay the professional to devote any attention to it. Very well; then what is the fuss about? Before passing on, we may remark incidentally that if photographers generally would show one-half the enterprise usually met with in almost any other branch of business, instead of devoting their attention to cutting one another's throats (and their own at the same time) in the matter of prices, there would be much less complaint of bad times, and "no money in the business."

But, to finish our park business. Simmered down, Mr. Corridor's position really amounts to this, that he would have our amateur, when asked to make a group, &c., answer in this wise: "Ladies and gentlemen, I should be most happy to accommodate you, but regard for the interests of my professional brethren (who have never done anything for me, and never will if they can help it), compels me, much to my regret, I assure you, to refuse. Three miles from here you will find a photograph gallery; you will immediately recognize it by the sign of the Golden Rooster."

Now, will Mr. C. be good enough to inform us why the amateur should act gratuitously in the capacity of a "tout" for a gallery? (We have already expressed a decided opinion that it would not result in sending any customers there, but that is not just now the question). We can call to mind instances where amateurs, being asked to execute work for compensation, have referred the applicant to this or that professional, with the result of throwing the work into the hands of the latter; but we have yet to hear of the first case where he received either commission or thanks.

But sufficient space has been devoted to this aspect of the question; as between the professional man and the amateur, the latter is very well able to take care of himself; and if the former wishes to annihilate him, the only way is to petition Congress to pass a law making amateur photography a penitentiary offense, and then form vigilance committees all over the country to see its provisions enforced. But there is another aspect of the question, and that also came up in the course of the conversation above alluded to. "Now, Professor," continues Mr. Corridor, "I do not think it is right for a stock house to issue circulars addressed to manufacturers, railroad officers and others, setting forth the ways in which photography may be utilized in their business operations; that their own employes can readily acquire the necessary skill, and the cost of the apparatus is trifling."

Let us deal first with the least important of the two grounds of complaint here, viz: That the stock-houses encourage an erroneous impression that good work can be done with poor apparatus, and with very little experience.

Now it stands to reason that a dealer would rather sell an outfit costing $100 than one costing $10, but he knows that very few can be induced to invest the former sum in what is, at best, an experiment, while hundreds may be willing to risk the smaller amount, and that, once started on his photographic career, the amateur or the business man using photography as an auxiliary in his business, will, in nine cases out of ten, before long discard his cheap outfit for a more expensive one.

Nor is there any real deception in the matter, as a general thing; the intending purchaser is usually shown results which have been obtained with the outfit, and may fairly be presumed to know whether similar results would satisfy him.

But, to put the matter in its worst possible light, it is as legitimate as any "trick of trade," and more so than the great majority of them. The argument of our friend C., of course, so far as he can be said to have any argument, is, that if the dealer represented to all parties then entertaining the idea of "going in" for photography as a pastime or an auxiliary in their business, that it would require an outlay of several hundred dollars and years of study and practice to enable them to accomplish anything, very few would embark in it, and he is doubtless right. But it is the business of the stock dealer to sell goods, just as much as it is the business of the photographer to sell pictures, not to discourage people from buying. It would be fully as reasonable to expect the man who runs a gallery to send away all intending sitters who could not afford to pay $20 per dozen for cabinets, on the ground that the best possible work could not be done for less, and that anything inferior to the very best was worse than nothing at all.

We come at length to a part of our friend Corridor's argument, which at first sight appears somewhat more difficult to answer, but the difficulty is more apparent than real. The point is, that by leading manufacturers and others to believe that their own employes can do their photographic work, the professional will lose just so much. Let us examine into this a little, and for this purpose we will take an old circular that lies before us, partly because it presents that particular application of photography as to which we are, from previous experience, able to speak with some authority, and partly because we have good reason to believe it was the particular circular Mr. C. had in his mind's eye when making the above remarks.

This circular reads as follows:

DRY PLATE PHOTOGRAPHY
AS APPLIED TO RAILWAYS.

The value of the art-science of photography to railway corporations is beyond question, when investigated. The late discoveries and improvements culminating in the gelatino-bromide dry plate, have made the methods of taking pictures so simple that any one of average intelligence comprehends quickly what is required, and is able to make photographs of any object, which can be duplicated at small cost in any quantity desired. A camera, with a few essentials, can be placed at convenient points along the line of a railway, and some station employe instructed in its simple manipulation, and you have a ready servant for any emergency. Should an accident occur, you can have a picture made of the same by the one having charge of the apparatus nearest the point of the wreck. You then have something that is worth pages of folio, and which can be duplicated in any number desired. You have, if required, indisputable evidence that can be used in any court of law. These exhibits are a great help in settling a loss, and, when placed in albums, a valuable record for reference for the officers.

ENGINEERING DEPARTMENT.—Our outfits are most valuable adjuncts to this important branch of railways, allowing the exhibit, at small cost, of any point on the line, all improvements, changes of grade, bridges, culverts, cuts, stations, etc. They can be used in connection with the microscope for determining the conditions and value of wood and metal entering into the construction of the road.

OFFICERS.—On their tour of inspection, officers will find these outfits of greatest use in securing any points they may specially desire to preserve and refer to. As the work is done by the camera *instantaneously*, the securing of any object is easily accomplished while running at full speed. Aside from the technical value of these views, our outfits will be found a pleasant feature for securing points of interest, any choice bits of scenery, novel objects that may be met with, groups, etc. The apparatus being very light, can be taken on hunting and fishing trips, and surveying tours, and in camp is a source of constant pleasure. All we ask is an investigation, being assured that you will secure an outfit at once when you see its wonderful uses and value. A manual of instruction accompanies each outfit, and at our warerooms complete and full demonstrations are given free.

Now, we know whereof we speak, when we say that for such work as mentioned in this circular, and for several other applications of photography to railroad work which are not included therein, the employment of an outside man to do it is simply, from the nature of the case, an impossibility. The work must be done by the company's employes, if at all, and, as it would cost too much to keep a special corps of photographers for that purpose, it follows that it must be done by those engaged in other occupations, and merely as an incidental business.

In fact, there are many cases that occur to us where it would be a physical impossibility to get a professional to do the work, at any expense. Then again, so far from the professional photographer losing any railroad patronage by the companies' employes being furnished with outfits, the effect will be the reverse, for, as these outfits will usually, in fact almost necessarily, be of comparatively small size—rarely larger than 8x10, and not very frequently even so large as that—the pictures obtained with these, mainly for utilitarian purposes, will suggest the desirability of larger views of the same and other subjects, for purposes of advertising and display; for this purpose, as is well known, they will seldom care for anything smaller than 18×22, and pictures 24×30 are not even now exceptional for such purposes; now it is evident hardly any railroad will invest in apparatus or dry plates of these dimensions, therefore our professional friends who possess such outfits will get the work, and it is an accepted fact that there is more money in large work than in small.

Undoubtedly the above remarks will apply equally to other undertakings besides railroads; we selected this instance for the reasons mentioned above.

We have devoted this large amount of space to the subject under discussion because there seems to be a good deal of misapprehension abroad as to its real bearings, and we do not think the latter have ever been fairly laid before the fraternity elsewhere. It is unfortunately true that a great many of the more ignorant amongst professional photographers—and we are sorry to add a few even of the more intelligent—have "boycotted" certain stock houses for catering to the amateur trade; and we have endeavored here to convince them of their error. The amateur movement is bound to go ahead, it is useless bucking against it; and those who are wise will lay their plans to profit by it, and make friends, rather than enemies, of the amateurs.

And a word of advice here to those stock-dealers who try to control a certain class of professional custom by representing that "We don't sell to amateurs, our competitors on —— street make a speciality of that business." This, of course, is done because the dealer making the statement thinks that any amateur trade he might get would not counterbalance the professional custom he would lose, provided the others sold only to the latter; but if all would take the straightforward position that they had a right to sell to whomsoever they please, and proposed to exercise that right, every one would be in the same box, and each professional client would remain with the house where he had been in the habit of dealing.

The idea of photographers dictating to a dealer as to whom he should sell goods, is an absurdity when carried to its legitimate conclusions. It would be just as reasonable for the bakers of any city to pass a resolution that they would buy no flour of any mill or dealer who sold a barrel to housekeepers or other private consumers, or for the hotel and restaurant men in the same town to resolve that they would patronize no butcher or grocer who supplied goods to families. But we are speaking now to dealers, and what we want to impress upon them is this: Supposing that by the course indicated above, they succeed in compelling all their competitors to "shut down" on amateurs entirely, what will be the result? The amateur movement will die out for want of materials? Not a bit of it. The inevitable result will be that opticians, dealers in sporting goods, druggists, and others will go into the amateur supply business, and having embarked in it, are not likely to confine their operations to that branch of the business. Already evidences of this are visible, and we earnestly recommend photographic stock-dealers to be warned by the "signs of the times."

To sum up the case broadly, photography is a science, not a trade, and can no more be monopolized by one class of men than can chemistry, microscopy or mathematics.

It is intended to make this a scientific journal, and to devote so much space as this to a question of this kind, is somewhat foreign to our usual policy; but it seemed desirable to ventilate this subject a little, and put ourselves squarely on record in the matter.

Gentlemen, the above are the sentiments of PHOTOGRAPHY, and by them we propose to stand or fall.

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OUR contemporary, the *British Journal*, in commenting on Mr. Roche's "combination alkaline developer," which the inventor says is equivalent to "all the developers put into one bottle," recommends that a few developers be left out, and adds: "A formula like this is almost sufficient to fog a piece of leather." It will now be in order to refer to Mr. Roche's "combination" as the "leather developer."

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THE prefect of the St. Petersburg police has come to the conclusion that to do a thing too much, may be worse than not doing it at all. And this is his reason: Some time since, a certain nihilist being "wanted," the prefect sent round to every police bureau in the Empire not one photograph merely of the desiderated man, but six *cartes*, each showing him in different position, and eagerly awaited the result. He was not long kept in suspense. In the course of a week or two he received a communication from the superintendent of a distant station far away in the wilds of Trans-Caucasia:—"Your Excellency," it ran, "I have the honor to report that I have already caused to be arrested four of the atrocious criminals whose portraits you recently sent, and from information received, confidently hope to capture the other two very shortly. I have the honor to subscribe myself," &c., &c.—*Photographic News*.

DR. GARRISON'S DRY-PLATE FACTORY.

We paid a brief visit to the above institution a few days ago, "dropping in" quite unexpectedly, so that the Professor had no chance to polish things up for our benefit. There is nothing overpowering in the external appearance of the building, which is neither large nor gorgeously decorated; but with its internal arrangement we are much pleased.

The office occupies the southwest corner of the building, while the southeast corner is devoted to the drying-room. Immediately back of these are situated, on one side the packing and glass-cleaning rooms, on the other the coating room. Continuing our journey toward the rear, we find to our right, behind the coating room, the department devoted to emulsion making and washing, while to the left, in rear of the glass washing department, is the engine-room. All the heat necessary for the operations of emulsion making, for raising the temperature of the air supplied for ventilation and plate drying, and for other purposes, is obtained from the exhaust steam of the engine which drives the ventilating fan. This fan drives the air (taken from an inlet outside the building, and at a considerable height above the ground) into a wooden box in the emulsion room, in which is a large steam coil, and from this the air current is distributed by wooden pipes to the rooms requiring it. Of course at this season of the year the steam coil is not used, the engine exhausting out-doors.

While on this subject, by the way, we may mention incidentally that the Doctor takes great pride in calling the attention of visitors to the very smooth and noiseless manner in which this little engine performs its work.

In the partition between the drying room and office is an opening for the exit of the spent air from the former, and in the opening is set a wheel provided with oblique vanes; the issuing current of air revolves this wheel at a speed corresponding to its own velocity, so that the presiding genius of the establishment, as he sits in his cushioned easy chair, smoking his cigar and reading the last sermon of Talmage or Beecher, can tell at a glance whether this important part of the process is working satisfactorily.

For mixing his emulsions Dr. Garrison uses an arrangement like a revolving churn, consisting of a demijohn set in a wooden box mounted on trunnions, one of which is prolonged into a crank for revolving it. This is undoubtedly a labor-saving device, while we are assured by the proprietor that it is entirely efficient; and we see no reason why it should not be.

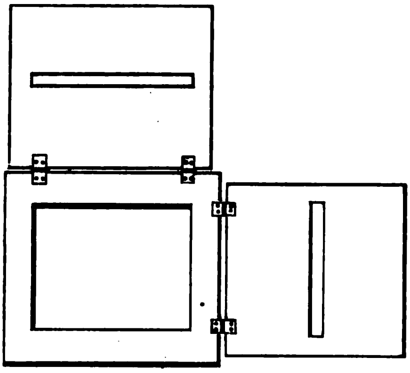
The part of the establishment which most attracted our attention, however, is the coating room. In the middle of this, and occupying a large proportion of the floor space, is a circular tank, in the upper portion of which is an annular trough of V shape in cross section, which is kept full of ice; immediately above this trough is a marble table of similar shape (*i. e.*, it is a circular table with the center cut out).

This table is hung so that it can be revolved by the operator, who is provided with a leveling bracket attached to the side of the aforesaid tank, on which is placed the plate to be coated; this done, it is transferred to the marble table, only a small portion of which is uncovered at a time, the remainder being protected from all light whatever by a wooden cover extending across the tank. Thus, as soon as two or three plates are coated, the operator gives the table a small fraction of a turn, carrying the newly-coated plates under the protecting cover, while a fresh part of the table is exposed for the next plate to be deposited upon. The diameter of this table is such that, by the time it is full and the first plate comes back to the opening, that plate is set, and ready for transferring to the drying racks; an assistant removes it accordingly; and when a rack is full it is transferred to the drying room.

In showing us this apparatus, the Professor called our attention to a space of about 1¾ inches between two adjacent segments of marble. At first we supposed he was going to explain that this was the effect of contraction, caused by the low temperature due to the ice below; but instead of this we were informed that it was the difference between the *circumference of a circle and three times its diameter*. In short, it is an optical demonstration of a fundamental fact in geometry; and its position, where it will constantly obtrude itself on the attention of the persons engaged in coating and removing plates, is doubtless intended to cultivate in them a taste for mathematics, a study which is good discipline for the mind in any occupation, and will doubtless tend to make them better plate coaters. We hope, at least, that it will induce them to coat their plates evenly, and if that object is attained, the proprietor's forethought will not have been exercised in vain. The dim light and silence of the coating room, so free from distracting influences, is admirably adapted for reflective study, and we shall not be surprised by the appearance before long, of a volume of "Meditations of a Plate-Coater."

He must not, however, allow his abstraction to carry him so far away from the matter in hand as to lay his plates on the setting-table upside down, or the reputation of this brand of plates may suffer.

In the packing room we were shown a very neat contrivance for cutting up plates to size, which cannot fail to obviate any chance of complaint on the score of plates being badly cut, too large for holders, etc.



It consists of a recessed frame into which the plate to be cut is dropped (the sizes ordinarily requiring to be cut up are 6½ × 8½ and 8 × 10), this recess being so little larger than the normal size of glass that any serious excess, or want of "squareness" in the plate will prevent its going in at all, and thereby compel its being laid aside to be cut down. Attached to two sides of this frame, by hinges, are two heavy brass plates, each with a slot in center for the diamond to work in; these fold down (one at a time) on top of the plate, but not in contact with it; thus (see cut), for cutting 8 × 10 plates into 5 × 8 the cover-plate shown to the right is shut down, the diamond held against the side of the slot, and plate cut; if, now, 4 × 5s are wanted, the cover is raised, the one shown at the upper side turned down, and the operation repeated, thereby ensuring the cutting of the plates into four equal parts.

The arrangement possesses another advantage besides those of accuracy and rapidity; viz., it protects all but a very narrow strip of the plate from light during cutting, and as that strip is the extreme edge of plate when cut up, any slight trace of fog there would be practically harmless. But, as will be seen further on, the packing room is so lighted that there is very little danger of this.

The two points which struck us most forcibly during our inspection of this establishment were, first, the rigid precautions taken to exclude all white light wherever it could possibly do any harm, and second, the very limited amount of red light that is admitted. The windows of the packing and emulsion rooms are glazed with two thicknesses of double-flashed ruby glass, and these windows are so placed that no direct light falls on the plates or the emulsion under treatment, unless they are purposely brought within range of it for close examination.

The coating room is lighted by a small ruby window in the partition between it and the hallway; a similar window being placed in the hall side of the partition and a gas jet between; this jet being ignited from the hall, and the hall receiving no light except from this red window when the doors leading to the office and glass-cleaning rooms are closed, as they always are when plate-making is in progress.

Thus a person can travel from one room to another without letting in any white light; and, moreover, the arrangement possesses another advantage; viz., an operator, in passing from one department to another, is always in this dim red light, and this must undoubtedly be easier on the eyes than if he had to encounter daylight in transit.

The drying-room is absolutely dark except when a small red "bull's-eye" lantern is carried in for the purpose of placing, removing or examining plates, and this is done only when absolutely necessary.

Our readers are most of them aware that Dr Garrison holds the opinion that one of the chief causes—if not the chief—of the foggy and flat tendency of most rapid plates is exposure to light during manufacture; and that it is the one especial point in dry-plate manufacture that needs reforming, and that the exceptional clearness and brilliancy of the plates he has for some time past made in an experimental way, are attributed by him to the great care he exercised in this respect, On this point it may be well to quote the words of M. Braun, in his paper published elsewhere: "When the day comes that gelatine plates can be prepared automatically and in total darkness, it will witness the ideal condition for the preparation of very sensitive films; and it is probable that in this way we shall arrive at a degree of sensitiveness far in advance of what we possess to-day."

Mr. Pringle, in his "Happy Medium" article, says: "For the preparation of dry plates light is not necessary; blind people and machinery can do the whole business."

We have not yet reached this beau ideal; but meanwhile it is satisfactory to find as near an approach thereto as practical conditions will permit.

In conclusion we way express our conviction that if the "Garrison" plate does not give general satisfaction it will not be for want of proper appliances and conditions for its manufacture.

PHOTOGRAPHING ON WOOD.

BY AN OLD PRACTITIONER.

Prepare the surface of block by rubbing thoroughly with pumice stone. Then whiten it with flake white, rubbing it on evenly with the ball of the hand or a fine brush. Let it dry thoroughly. Now coat the block with salted albumen according to the formula given below, flowing it like collodion. Use a glass stirring rod to distribute the albumen evenly on the block, being careful not to let the rod touch the block. When evenly coated stand the block on edge on a piece of blotting paper to drain and dry. Repeat this coating operation two or three times, letting the block dry thoroughly between each. (This part of the process may be conducted in full daylight.) Silver the block (when quite dry after last coating) in the dark room with plain nitrate of silver solution, 40 grains to the ounce. This should be done in the same manner as the albumenizing, viz., by flowing and using glass stirring rod. When dry fume with liq. ammonia 10 minutes.

Now place the negative on the block, either in a printing frame made for the purpose, or by clamping it with wooden clamps. Expose to light from 5 to 30 minutes according to density of negative and intensity of light. Print rather fully, as it bleaches a little in fixing. If you use clamps scratch the negative in some unimportant place so that you may watch the progress of the print. (The special frames made for this purpose permit of opening for examination as in ordinary printing on paper.) When sufficiently printed, it is ready for toning and fixing; toning, however, is entirely unnecessary. Wash the block and fix in hypo. about 10 minutes. Wash again thoroughly, stand on edge to dry, and block is ready for engraving.

Albumen Solution.

White of an egg beaten to a froth; let settle then pour liquid part into a bottle, add double the quantity of water, also 15 grains chloride of sodium and 2 drops liq. ammonia.

Silver Solution.

1 oz. Crystallized nitrate of silver.
12 oz. Water.

Fixing Solution.

1 oz. Hyposulphite soda.
6 oz. Water.

A fixing bath to which oxalate developer has been added is known to be a very energetic reducer; and Herr Martini finds that if a dense negative is left for half a day in a mixture of two parts of the usual hypo solution, and one part of fresh oxalate developer, every trace of the image disappears.

Miss Mary Anderson has the satisfaction of knowing that a recent portrait taken of her is one of the largest of the stock sizes. It is called the "Heroic" size, and we shall soon no doubt get to "colossal," and have to be taken in instalments. The members of the Photographic Club of the future may, in fact, have to take in their portraits in parts, whilst the modest album of the past will have to be replaced by a photographic gallery.

Dr. Vogel's proposal to use colored glasses in conjunction with eosine plates for the production of such colored objects as paintings, is one capable of extensive application. Major Waterhouse, however, suggests that it may be better to illuminate the subject with colored light. He says: "Colored glasses seem fatal to sharpness. A better plan would be, I expect, to throw a beam of *colored light* on to the picture with a lime light or electric lamp."

Meetings of Societies.

SOCIETY OF OPERATIVE PHOTOGRAPHERS OF NEW YORK.

At the regular meeting June 4th, President Buehler in the chair, the topic for discussion was "Artistic Printing."

Mr. Schaidner remarked that at one gallery it was the custom to cover the shadows of a negative with a little opaque, and wanted to know if that was "artistic."

The Chair said there was undoubtedly a great difference in the scale of lights and shades as between a dry plate negative and a wet plate one, and this rendered the printing of the former more difficult.

Mr. Atwood did not find any difference between them so far as printing was concerned.

Mr. Sprotle said that in printing vignettes from weak negatives he used more tissue paper, but they never yield as good a print as good negatives. A good many people print a strong negative in the sun and a weak one in the shade; he did the reverse, and got much softer prints.

The Chair had seen groups printed from several negatives, and that he called art.

Mr. Miltenberger considered that a good dry negative would make as good a print as a wet plate.

The Chair expressed the opinion that dry plate work, if it had not already reached the wet collodion standard, would undoubtedly do so in the near future. When a man has to print from 100 negatives every day, it is impossible for him to bestow proper attention on any of them.

Mr. Atwood observed that the rule in most printing rooms now is to rush through the greatest possible amount of work, without reference to quality.

Mr. Acker thought that the combination printing referred to by the president as "artistic," was, and would continue to be, on the decrease; it was done principally in small galleries where they have very few backgrounds. In large galleries where they have a good stock of backgrounds and accessories, such a case seldom occurred.

Mr. Atwood called attention to an illustration in "The Art and Practice of Silver Printing," by Robinson and Abney, which he considered a good example of artistic printing. The method of production of this picture was described in the book.

Mr. Miltenberger related how he had occasion some time ago to print from a 14×17 negative of a lady. There was a deep yellow stain in the middle of the plate. They took another negative of the background and printed it in from that. One negative was less intense than the other, so that the print showed a slight difference in tone, but the lines of junction could not be distinguished.

Mr. Buehler asked if any one could tell how Moreno made his portraits with cloud backgrounds. Mr. Atwood understood it was done by interposing a tinted glass with a clear centre between the lens and the sitter. On this glass the clouds are painted.

The association adjourned until Sept. 3d.

ROCHESTER PHOTOGRAPHIC ASSOCIATION.

Regular meeting Monday, June 30, 1884.

President J. M. Fox in the chair.

After the usual routine business the following new members were elected: Rev. W. W. Walsh and J. H. Hoagland. The motion to adjourn the meetings of the society until the hot weathe was over was lost.

The question of how to mount prints on cloth was then discussed.

Mr. Monroe stated his plan was to lay the cloth upon a board or other level surface, tack the edges and then proceed to mount the prints in the usual manner, using the paste cold and having it first strained through muslin; to facilitate the mounting the cloth should be first dampened.

Mr. Godfrey asked would it not be well to paste the cloth also, before mounting the picture.

Mr. Monroe said he had tried that plan but did not think it would always work satisfactorily.

Mr. Wardlaw suggested coating the board (upon which the print was laid to be pasted) with paraffine, by doing so no trouble would be had from the cloth adhering to the board.

Mr. Godfrey said he had seen many excellent prints mounted upon cloth by the President and would like to have him explain his method of working.

Mr. Fox: After trying many experiments in double mounting on muslin I have adopted the following method. I prepare several yards of cloth at a time by sizing with starch, and always keep a roll of it on hand ready for use.

While damp the cloth is stretched, not too tightly, on a frame and sized plentifully with warm starch paste, made rather thin, and spread on evenly. When large quantities of muslin are used perhaps tenter bars might be employed to advantage for stretching. When dry the cloth is cut to the size required before mounting, allowance being made for the expansion of the prints. If the starch for mounting is used while warm. (which I think preferable) it should be as stiff as can be conveniently spread on the print, for the reason that it will expand the cloth less and dry quicker.

From the moment the first print touches the cloth, dispatch is important, therefore both prints are first pasted, one being laid aside ready to be picked up quickly. The first print is rubbed down with a hand roller which can be done more expeditiously than with the hands. When the second print is properly laid on the opposite side there is less occasion for haste, and rubbing down by hand is preferable, because, although the roller does the work perfectly on the first print mounted, it is liable to leave air bubbles in rolling down the second one. To avoid bubbles, in the hand rubbing the strokes should be toward the right and left or up and down from the middle of the print, and not in every direction from the center.

When the mounting is completed the prints are pressed between papers and covered immediately with several folds of cloth of sufficient weight to keep them in place. To facilitate drying they may be aired after an hour or two and placed between dry papers and again covered with the cloth.

The question, which is the best place for an instantaneous shutter, the front or back of a lens? was answered by Mr. Wardlaw; he said: The place for instantaneous shutters in my opinion is at the back of the lens, or better than either the back or front of the lens, is between the lenses next the stops.

The reason is that the vibration which occurs more or less in all shutters, will be less noticeable there than if placed in front of a lens.

The question how to produce cold tones on ready sensitized paper was also answered by Mr. Wardlaw. He said several years ago he had used ready sensitized paper; the greatest difficulty he had was from insufficient fuming, and judging from prints on this paper which he had seen of late years that still seems to be the principal fault in working it. It had been suggested to him that if after the first four washings the prints were made alkaline by immersing in a weak solution of sal soda the tone would be greatly improved. and he had seen a printing formula by one of our members (Mr. Learned) recommending the same treatment, only using borax instead of sal soda, but Mr. W. thought sufficient fuming before printing is the proper way to do.

During the discussion the subject of enameling photographs was mentioned. Mr. Inglis recalled the fact that the glacé finish which was once popular had now gone out of style.

Mr. Wardlaw: The reason it was no longer worked was that it required great care in the operation, resulting frequently in failure.

Mr. Inglis did not think so; the process he worked was not only simple but practical, and could be easily worked successfully.

Mr. Godfrey was of the opinion the glacé process was both difficult and expensive; he would like Mr. Inglis to explain his manner of working.

Mr. Inglis: A very simple and reliable plan of making the enameled (or glacé) photographs is as follows:

A sheet of any smooth surfaced glass (plate is best) is cleaned by any of the usual photographic methods; now rub over the plate a solution of alcohol containing about five drops of nitric acid to the ounce; rub over the glass and polish with a dry piece of canton flannel; finally *dust* a little soapstone or French chalk from a small muslin covered box containing the chalk; brush it off lightly with a clean piece of canton flannel; be careful not to rub hard as in that case the chalk would deaden the polish of the glass plate. This done the glass is now coated with plain collodion, five grs. cotton to the ounce of equal parts alcohol and ether. The plate is now allowed to dry and can be kept in this state any reasonable length of time; when dry lay the plate upon some level place and cover with a solution of plain gelatine about the consistency of cream, at a temperature of 90 or 100 degrees; allow the plate to lie flat until the gelatine sets, which will depend on the temperature of the room.

When dry stand the plate (or plates) up to dry and store them away; in this state they will keep indefinitely, and it is well to keep a stock on hand in this condition, as pictures can be mounted in a few moments.

To mount the picture lay one or more of these plates upon some level place over the sink, so that the water to be used will have free escape to the waste pipe. Cover the plates fully with water, allowing as much to remain upon the surface as possible, lift the pictures from the water they have been washed in and lay them face down upon the prepared surface of the plate, filling it with as many prints as it will hold, arranging them according to their sizes; pay no attention whatever to the bubbles. Have a piece of thin rubber cloth and a squeegee—lay the rubber cloth over the plates and with the squeegee press the pictures into contact with the glass, at the same time take out all air-bells by passing it back and forth over the plate. This done run around the edge of the plate with a knife to take off the gelatine and collodion, ½ inch; this is to allow the paper that is mounted on the back of the picture to adhere to the glass, which will thus bind the whole thing down until liberated by being cut inside of this safety edge, otherwise the pictures would be apt to leave the glass before they are thoroughly dry and thereby lose the brilliancy they would have if properly dried. After the pictures have got surface dry, give them a coat of thin gelatine and cover them with a wet sheet of manilla paper or any common paper same size as the plate; now mount them with card-board, known as printers' card-board, because it is cheap and answers every purpose; finally cover the whole with an enameled sheet of paper of any tint desired, thus having an enameled mount when the picture is finished as well as an enameled photograph. After they are thoroughly dry cut inside the safety edge when the prints will come off with all the beautiful finish possible. The prints may now be stamped out with a round or square cornered die, or cut with a knife any desired shape; the edges may be beveled and bronzed with a little gum arabic and bronze applied with a camel hair brush.

The whole operation is simple and not nearly so complicated in its working as it appears from the description of how to do it.

The Secretary announced the receipt of the *Times*, the *Philadelphia Photographer*, the *Bulletin*, the *St. Louis Photographer* the *Eye* and PHOTOGRAPHY, after which the meeting adjourned.

At the meeting held July 14th the first question was, "Why do some dry plates lose more strength in fixing than others?" Mr. Lee said that an undertimed plate will sometimes be apparently strong enough in the developer, but come out weak.

Mr. Inglis said that where only one defective plate was found in a lot of good ones the fault was generally with the manipulator. Sometimes when the plate has abundant exposure, after a short development it would appear to be sufficiently developed, but would only print a shadow.

Mr. Maudsley said he had met with plates which would develop superficially and would not be strong; he thought that the trouble was owing to a peculiar condition of the silver.

Mr. Lee inquired if the difficulty could be obviated by modifying the developer and continuing the development.

Mr. Maudsley said he would use a strong solution of pyro and restrain with bromide.

Mr. Inglis had found that it required longer for a thick coated plate to fix than it did for one thinly coated.

Mr. Lee: I have seen one make of dry plate that would take longer to fix than others, there seems to be a prejudice among photographers against using a strong solution.

Mr. Maudsley said he did not see any objection to a strong solution of hypo. It is commonly recommended that when a visible fixing has taken place, the plate should be left a little longer.

Mr. Inglis had seen soda spots caused by light fixing, the spots showed yellow.

President Fox asked if the spots could be caused by lack of washing.

Mr. Inglis thought not, he did not know of any thing that could cause them but imperfect fixing. He had seen plates that could not be fixed by leaving them in the fixing solution an hour.

Mr. Maudsley: That is the fault of the plate unquestionably; the trouble is caused by the reduction of the silver.

A general discussion followed in which the question as to the best method of photographing on wood for engravers came up. No one present had had any experience other than by the old collodion process.

President Fox said he had fixed some plates in soda and did not have occasion to print them for several days, he then found a coating of metallic silver on the surface of the mixture. The only reason he could suggest was the presence of iron in the water.

The following questions were submitted for discussion at the next meeting: "Why does a lens illuminate a plate more in the center than the edges?" "Does it pay to save washings and what is the best process?"

The meeting then adjourned.

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Chicago Amateur Photographers' Club.

The regular monthly meeting was held in the club room, 229 State St., Monday evening, July 21st, Dr. Garrison, president, in the chair. The attendance was good—very good, considering the temperature.

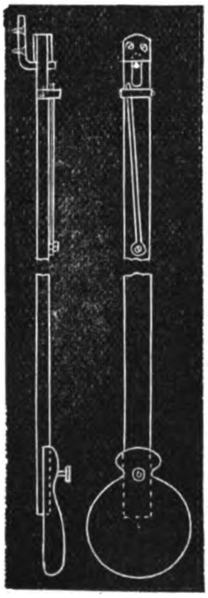
On motion, reading of minutes last meeting dispensed with, and minutes adopted as published in the journals.

The Secretary announced that a copy of "*The Amateur Photographer*" had been presented to the club by the publishers, Messrs. Porter & Coates, Philadelphia. On motion, a vote of thanks was passed to these gentlemen for their donation.

The Chair directed the attention of the meeting to a couple of instruments of precision, which he had brought with him

The first was a pendulum beating seconds. Such an instrument was very useful for timing negatives and other purposes, in a gallery, dry plate factory, etc. This one he had made for his own use, and any of them could readily make one for themselves. Probably nearly every one present was aware that the correct length of a pendulum to beat seconds is one metre—39.38 inches nearly.

The rod was of wood, which not only presented advantages in point of cheapness and facility of construction, but was in fact about the best available material for the purpose, because very little affected by changes of temperature.



The "bob" was a heavy chunk of lead—weight immaterial, but within reasonable limits the heavier the better, because the pendulum will run longer, and the heavier the bob in proportion to the rod, the more readily and accurately can the centre of gravity be determined. He might remark here, for the benefit of any one who might not be aware of the fact, that for all practical purposes the position of the centre of gravity of the pendulum may be ascertained by balancing the pendulum, complete, ready to hang, on a knife-edge, and marking the point where the knife-edge intersects the center line when the pendulum balances. (The speaker here gave an ocular demonstration.) Having thus marked the bob, move it on the rod until the distance from this line to the knife-edge, on which it oscillates, is just one metre. In the pendulum shown, a brass set screw was employed to secure the bob in its proper position, but various methods would suggest themselves to a person of a mechanical turn of mind. Perhaps some of them might wonder how he got his bob in such an artistic shape; it happened in this way: looking around for something in which to cast his lead, he espied a cast iron retort-stand bottom, and this, turned upside down, served as his mould.

At the upper end of the wooden rod they would observe a slot was cut for the center pin on which it oscillates to pass through; above this opening two steel plates are attached by wood-screws, so that their lower edges project down over the opening a little way; these edges bear on the upper side of the suspension pin, which is brought to a V-shaped edge, and this completes the pendulum proper; but as it would, in this shape, be noiseless, it would require watching in order to count seconds; therefore he had applied to the upper part of the rod an ingenious arrangement invented, he believed, by Mr. Burnham, and used by the latter in connection with his astronomical telescope. It was extremely simple, consisting of a piece of small round iron, about 7-32 in. diameter in this case (but the size might vary materially without affecting the result), and about ten inches long, made with an eye at the bottom, through which a screw was passed, enabling it to oscillate freely; this was confined at its upper or free end by a loop of flat iron or brass, attached by screws to the sides of the wooden rod, so that the iron rod can vibrate just the width of the wooden one; now, as the pendulum swings to one side, this rod drops over to the other, and in striking against the metal loop or strap, makes a sharp "click" which can be heard a long distance when there are no distracting noises to interfere. Properly hung, the pendulum shown would oscillate for fifteen minutes with one impulse. He would call attention here to a misapprehension which was somewhat prevalent, viz., that when a pendulum swings in a large arc it goes faster, *i. e.*, makes a greater number of "beats" in a minute, than when its arc of vibration is short; but a very little reflection would show them that this is a mistake; the bob travels through a greater space in a second; but as it has so much farther to go, it takes just as long to make a complete vibration; the one just balances the other.

The other instrument to which the speaker wished to direct their attention, was the modification of Prof. Hough's sensitometer described by that gentleman in the last issue of PHOTOGRAPHY, the original sensitometer having been described and illustrated in the preceding number of that journal.

The difference between this and the original sensitometer was, that in this the scale was in front of the revolving disc instead of behind it, and was transparent, *i. e.*, the figures were transparent on an opaque ground. The scale is made by exposing to light and developing a gelatine dry plate, and then scratching off the film to form the figures. But various other ways would suggest themselves for accomplishing the same object.

The clock movement was placed in the wooden box at the top, and mainly above the centre of rotation of the disc, so as to leave the whole of the scale, which is below the centre as in Prof. Hough's original arrangement, clear of obstruction; behind this, at any convenient distance, which must be determined by experiment, was placed a standard sperm candle, the plate to be tested being placed against the face of the scale (face to face). A slide made of ferrotype plate was adapted to go between the scale and disk, so as to cut off all light until ready to commence the test. All being ready you light the candle and let it get burning steadily, then start the clock (this clock can be kept wound up and started when wanted) and draw your slide, commencing to count your seconds from the instant of doing so. For this purpose the pendulum just described would be found just the thing, it being started about the same time as the clock. For terminating the exposure, the best and easiest method was to blow out the candle.

As this piece of apparatus was only just completed, Dr. Garrison had not been able to make any reliable tests with it; he had made some exposures this noon, but owing to giving too much time, all the plates tested came so near the end of the scale that the indications were not very reliable. He would observe that there were two available methods for regulating the amount of light received by the plate under test. You can vary the distance between the candle and the scale, or you can vary the time of exposure, or both. Prof. Hough had pointed out at a previous meeting the well-known law of optics, that the intensity of light varies inversely as the square of the distance from the source of light to the object illuminated. Therefore if the candle was placed two feet from the scale the plate under test would only receive ¼ of the light it would with the candle one foot distant.

Prof. Hough explained that the length of exposure and intensity of light should be so regulated as to bring the last visible figure near the centre of the scale, as an error of one number here was much less than when it fell toward the end, as in Dr. Garrison's experiments to-day.

Dr. Garrison admitted the correctness of this. He would add that the device allowed of testing the plate for other qualities besides rapidity; thus, as a large part of it was protected from the light, it was easy to see whether it developed clean or foggy.

Prof. Hough observed that it made no difference whether the figures of the scale were transparent on an opaque ground, or opaque on a transparent ground; but on the whole perhaps the former arrangement, as adopted by Dr. Garrison, was the most convenient.

This modification of his sensitometer could be used as a standard all over the world, as a "standard candle" was a known quantity, and there was no difficulty in "standardizing" one.

Mr. Green hoped that this sensitometer would be adopted, and used with proper care to insure accurate results, by all plate-makers, and every box of plates sent out marked accordingly. It was an impossibility for any plate maker to make, say, half a dozen successive emulsions exactly alike in sensitiveness, but that was a matter of very little consequence if we only knew the exact speed of each one; what he complained of at present was, that you have no means of knowing the actual rapidity of the plates in any particular box, unless you use up one, and generally more than one, as a test, and this would not do. He had before now been off on a trip and lost a whole batch of negatives, through the lot of plates he took with him happening to be very much slower than the preceding two or three batches.

Dr. Andrews asked if any experiments had been made to determine the relative rapidity of wet and dry plates. He somtimes saw a ratio as high as sixty times claimed for the latter.

Prof. Hough replied that evidently the last speaker did not read the literature of the art-science, or attend these meetings very regularly, or he would be aware that the present speaker had related the results of a series of experiments bearing on that very point at the last meeting of this club, and had also published them in a paper contributed to the July 1st issue of PHOTOGRAPHY.

He would add, since the question had come up, that since those experiments he had made a collodion that worked a little quicker, and, taking this collodion and the present condition of his silver bath as a standard, he did not believe any commercial gelatine plate in the market would register twenty times as fast. In fact, he had no hesitation in saying distinctly that it would not.

Prof. Hough went on to state that, owing to the discussion which arose at last meeting on the subject of the relative intensity of light under a photographer's sky-light and out of doors, he had tried some experiments to settle that point. He took his sensitometer into a studio on Cottage Grove Ave. and found the ratio one to three. Then, he had also taken his camera and lens (No. 1 Hemispherical) into this same gallery and made a portrait with the 7 mm. stop, also making another exposure on the same subject (himself) out of doors. The out-door portrait had three seconds, the in-door one fifteen, about one-third of the available glass surface being obscured by curtains, in fact, light being arranged precisely as it usually is by this operator for making portraits under similar circumstances. The out-door portrait was timed right, the other came out a trifle undertimed, but allowing for this he estimated the time as one to six. He handed round prints from both negatives so that members could judge for themselves. The lens generally used by this photographer, with the diaphragm he usually employs, is just about twice as fast as the professor's with the 7 mm. stop.

Prof. Hough thought it best to repeat here, as there seemed to be considerable misapprehension on the subject, that the speed of any lens is *directly as the square of the aperture and inversely as the square of the focal length.* There will be a slight variation between individual lenses of different construction owing to absorption by thickness of glass and reflection from the various surfaces of the lenses forming the combination. This difference in the most extreme case, would be so small that it might be disregarded in practice. In proof of this, he had made a negative with a pin hole instead of a lens, giving a ratio of about $^1/_{1000}$, and the time of exposure, calculated according to the above law, held good.

Dr. Garrison said that in testing gelatine plates with this sensitometer he had observed that some of them brought out a good many figures, but would not develop up to any intensity anywhere, while others showed the figures strongly to a certain point, and then dropped off all at once, as it were. This he attributed to a sort of electrolytic action, one particle of reduced silver attracting others. Or it might be illustrated by comparing it to the phenomena of crystallization: a solution just on point of crystallization will often remain fluid while undisturbed, but as soon as you plunge a stick in, or otherwise disturb it, it will solidify almost instantly. Now, if you are photographing a drawing with black lines, say making it the same size as the original, if you measure with a micrometer the width or thickness of the lines in the original and in the negative, you will find the latter are narrower than the former; the deposited silver forming the opaque part of the negative has encroached on the transparent lines.

Mr. Douglass suggested that another open air meeting or "field day" be organized. Some correspondence had taken place between one of the members and a gentleman at Ottawa, Ill., and they found that very satisfactory arrangements for transportation, etc., could be made, and the trip would include Deer Park, Starved Rock, and several other points of interest; the scenery of that part of the Fox and Illinois rivers was some of the finest in the state.

Dr. Andrews endorsed the last speaker. Thought it would be well to include last six miles of the Fox river in the excursion. He understood that distance comprised some very fine scenery.

On motion, a committee of three, consisting of Mr. Douglass, Dr. Andrews, and Mr. Burnham, was appointed to investigate and make the necessary arrangements.

On motion, adjourned.

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FIELD EXCURSION OF THE SOCIETY OF AMATEUR PHOTOGRAPHERS, OF NEW YORK.

The first field excursion under the auspices of the above society occurred on the 20th of June, and proved very successful both socially and photographically.

The beautiful river and mountain scenery between Peekskill and West Point, on the Hudson River, was the objective locality selected, and afforded the party abundant opportunity to make picturesque photographs.

The party took the eight o'clock train from the Grand Central depot for Peekskill, and were met there by Dr. P. H. Mason, Moses S. Beach and Mr. Atwood, formerly of New York. They were then conducted by Dr. Mason and Mr. Beach to the steam yacht Zephyr, which lay at the wharf, near the depot.

Cameras were now unpacked, mounted upon their tripods, and everything made ready for work.

Prior to their departure, photographs of the party were made by Mr. Atwood.

The thanks of the party were extended by the President to Mr. Atwood and his assistant, Mr. Haines, for their attention and courtesy.

The light was excellent and the day very clear, the atmosphere having been purified the night before by thunder showers. Light clouds dotted the sky, casting their shadows upon the round and symmetrical mountain tops, forming a superb background for the many landscape views which were secured. A light northwest wind made the sail up the river comfortable and agreeable.

The following amateurs composed the party: Henry J. Newton, James B Metcalf, P. Grant, P. Grant, Jr., Wm. Chamberlain, Gilbert A. Robertson, C W. Dean, Dr. P. H. Mason, Jas. M. Rich, F. C. Beach, President, and Jos. Rich, Treasurer.

At the invitation of Mr. Beach, Dr. Mason assumed command of the boat, and she was headed down stream for a short distance. Here Mr. Newton, Mr. Robertson and Mr. Beach took a small boat ashore to obtain some views of the Raceway and Dunderberg Mountain opposite.

The remainder of the party amused themselves during Messrs Newton and Beach's trip ashore in making some groups and a few drop-shutter exposures of a private yacht lying to near by.

Continuing on up the river, the next excitement was the photographing of the "Chauncey Vibbard" as she passed by, under the shadow of Dunderberg Mountain, on her way to Albany. It was an interesting sight to see some seven or eight men standing on the deck behind their cameras, ready to let go the shutters as the steamer speeded by; and the successive click of each shutter as the "Vibbard" came opposite the center of each instrument reminded one of the firing of guns, by infantry, in succession. Some good pictures were obtained, and their effect was heightened by the beautiful clouds which appeared at that moment.

Passing on, several views were made from the boat of the fine rock scenery which jutted abruptly into the water; and in a short time the party were brought to Iona Island, a locality noted for the height of the surrounding mountains and the beautiful scenery. Here all hands disembarked, carrying their instruments ashore; several views were taken, the one which proved the most attractive being that of Anthony's Nose, on the east side of the river, opposite the island.

On boarding the yacht again, the party were conveyed up the river to Garrison's, and *en route* refreshed with lunch, which had been provided by Dr. Mason. A few drop-shutter exposures were made on passing vessels. At Garrison's a belated member of the party was taken aboard and the boat continued on to West Point, the authorities there having kindly given Dr. Mason the privilege of landing.

West Point roadway was ascended in a broiling sun by six or seven of the party, who were repaid for their labor in securing some fine views of the river and surrounding mountains. Pictures of the cadets and their camp were taken, and of portions of the celebrated Flirtation Walk, which winds through the woods from the hotel to the wharf. Those who remained on the yacht were successful in obtaining excellent drop-shutter views of the steamer "Albany," on her way down the river.

At three o'clock the whistle was sounded for members to return, and in a few minutes thereafter the yacht started up the river; some views of Storm King and bits of scenery along the river were taken from the boat. She then turned homeward, stopping occasionally for a view. On the return to Peekskill an estimate of the number of exposures made resulted in the astonishing number of ninety-four!

Four makes of cameras were used—Anthony's Novel, Scovill's, Pearsall's, and an English camera; also three varieties of shutters—an English sliding double shutter, operating in the center of the lens, Prosch shutters, and drop-shutters. The following brands of plates were used: Inglis, Monroe, Hudson, Eastman Special, Eastman Tropical, Cramer's, Norden's, Seeds, Forbes, and Kingston Special.

Shortly after five o'clock the party landed at Peekskill, and took the six o'clock train to this city.

The President was congratulated upon the success of this, the first excursion, and it was intimated that a second one should be projected. The thanks of the party were extended to Dr. Mason for his efforts in providing for the comfort of the members on the yacht. The results of the trip will be recounted at the regular meeting in July.

ON THE ROLE OF PHOTOGRAPHY IN THE CREATION OF WORKS OF ART.*

BY LEON VIDAL.

The theme that we have the difficult mission of unfolding before you to-day is one of the most vital interest; it concerns the *part of photography in the creation of works of art*—already a considerable one, and destined to increase in importance in measure as we understand better the means of practicing without difficulty, and above all, without embarrassment, this drawing by means of light.

Such are the means that we propose to indicate during the course of this conference; but after first showing the actual present position of original photographic productions, from a legal point of view on the one side, and from a purely esthetic one on the other * * *

We are not among those who say without any preliminary explanations that *photography is an art;* that is to say, that it is capable of producing works of art.

It is certain that a photographer may at the same time be an artist, and, reciprocally, that an artist may know how to manipulate a camera. In such a case the result obtained may be, intrinsically speaking, a veritable work of art.

But this interests us little at present: that is not the question under discussion; and our aim is more serious when, addressing ourselves to artists, we say to them: Lay aside the prejudice which chains you to old methods, constraining you to use photography only in an indirect manner. On the contrary, employ frankly this graphic method—so rapid, so exact—to create for your studies, for the execution of your works, such precious artistic notes.

Behold what advantage you will derive from it!

You start out for a country walk. A succession of fine points of view strikes your gaze; armed with your crayon you are powerless to reproduce all these fine sites without passing a long time on the spot, and returning frequently at the same hours to secure always the same effects of light.

Should you desire to commit to memory these scenes, it would be impossible; however retentive your memory might be, it could not preserve for you the image of all that has attracted your admiration: but if, having recourse to the pencil of photography, you reproduce in turn these diverse views, will you not then have a perfect aid to memory?

Will not each one of these images, fixed upon paper, be for you a reflection of nature herself (colors excepted)? And when in your studio you examine this collection, will it not seem as though recommencing your walk across country? Will you not see again the same sites you had admired, just as though they were again before your very eyes?

In a word, what your eye has perceived but your memory failed to preserve, an artificial retina has seen just as it was presented to your eye, and seen much better than yourself, and, in addition, has recorded its vision.

Can it be conceived that such a marvelous means for the creation of artistic documents is still so neglected, so little diffused amongst artists, who ought to make constant use of it?

Not only does this artificial retina—so perfect, even in despite of its failure to reproduce colors—permit us to accumulate an infinite collection of souvenirs of inanimate nature—or nature in repose—but it comes to the aid of our eyes by seeing quicker and better than they can when animals or objects in motion are concerned. We will explain:

The sensation of an image striking the retina of the eye is retained there for a space of time relatively so long that it becomes difficult to perceive distinctly the details of an animated object, of a moderately rapid movement. Thus, the wheel of a carriage in motion does not appear to us as it really is; we cannot distinguish the spokes; they are confounded in a sort of continuous plane surface. Thus, a painter who is representing a carriage in rapid movement takes care not to draw the wheels as he sees them at rest.

The photographic eye, on the contrary, can stop the wheel, as it were, during a duration of 1/100, 1/500 or even 1/1000 of a second, and fix the impression of it with the exact effect produced on our eyes by the wheel when at rest.

For studying the movements of animals, this property of seeing so rapidly and of fixing an impression of a reflection which can hardly have lasted 1/100 of a second gives to photography a character of incontestible utility for artists.

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*Extracts from an address delivered before the Chambre Syndicale de la Photographie, Paris, June 16, 1884.

The horse, at all times, has been much studied, especially by painters of battle scenes. Every one of them has been obliged to render on the canvas the mean of his visual recollections; thus it happens that until these latter days—until photography has permitted us to see it with the rapidity of lightning—every painter, without exception, has represented inaccurately the attitude of a galloping horse.

In fact, when a horse is driven at a gallop, there is a moment when his four femoral members have left the ground; at this moment they are all directed toward the middle of the animal —*i. e.*, doubled up under him, although the conventional method, on the contrary, shows the four legs of the horse in the air, as distant as possible from one another before and behind.

(Here the lecturer showed on the screen how this position of a galloping horse is generally represented; the slide used being an exact copy of part of a painting by Géricault, and compared it with the true position discovered by the aid of photography).

From the point of view of pleasing lines, doubtless artists will prefer the interpretation of Géricault to the truth; but it seems to us that a compromise can always be made which will respect the truth without sacrificing beauty.

The studies of Mr. Muybridge and M. Maret on animals in motion have recently thrown a new light on this interesting question of the analysis of movement in each of the phases of the walk, the trot, the gallop, the leap.

These silhouettes, taken successively by Mr. Muybridge at extremely short intervals of time—say $^1/_{50}$ second—permit us to follow very closely the successive phases of the movement. We see thus that at the only instant when the animal has all four feet in the air, he has his shoes near together and not separated according to the conventional method of representation.

No one will dispute the interest presented by similar studies; nor, as we think, that all schools of art should welcome as a complement of the regular course of study for artists, the accessory instruction in the processes of reproduction by light.

It is not a question of long and serious study like those of drawing, painting, engraving, but simply of obtaining such a command over the photographic pencil that each artist may be able to execute for himself his collections of visual impressions, without being the tributary of a special practitioner.

Wherefore (since the artist, operating himself, can choose so much better what he wants) should he have recourse to an intermediary? He can better select himself his effects of light, better group his figures; he can, in one word, do the artist's work just as much as though he were using his pencil; yet this will not hinder him (the document once secured) from idealizing the too great realism of it—from impressing on the final work, of which the impression from nature has been merely a memorandum to aid the memory—an absolutely personal character.

The Development of Instantaneous Negatives.[*]

BY M. F. BRAUN.

The development of the latent image on a bromo-gelatine plate is an operation whose difficulty increases in proportion as the exposure has been insufficient to produce a good impression; which is almost always the case to a greater or less extent in taking negatives of objects in motion, when the exposure must be the shortest possible.

I shall only consider to-day the method of development with alkaline pyrogallic, that being the process with which I am most familiar, and which I have used for five years past.

This developer consists of a solution of pyrogallic acid, which is the developing agent (*révelateur*), of a solution of ammoniacal gas, which may be considered as the accelerator; and finally of a solution of some soluble bromide, which serves to preserve the transparency of the shadows, which may be called the retarder.

The relative proportions of these ingredients as between themselves, may be modified according to the results it is desired to obtain; that employed by myself in my current work is composed as follows:

10 parts (by weight) of a ten per cent solution pyrogallic acid.

4 parts (by weight) of a ten per cent solution bromide of ammonia.

12 parts concentrated solution of ammonia.

Dilute with 175 to 200 parts pure water.

I have used this developer on quantities of commercial dry plates and have always obtained good results by giving each brand of plates the proper exposure; but it will not work satisfactorily if the bromide is omitted.

Very sensitive plates have almost invariably fogged in my hands. Those relatively slow have yielded negatives a little less transparent, but with much better and more correct modeling; further, of two plates from the same emulsion, with an equal exposure, developed with and without bromide, the latter gave a much better (*bien mieux venue*) image, full of detail in the shadows, where it was absolutely wanting in the former.

In view of these advantages, I have asked mysel if it was not possible to prepare very sensitive plates which could be developed without soluble bromide, or at least with a very small quantity—say $^1/_2$ part to 10 parts pyro.

The nature of the bromide of silver itself remaining unchanged, there are three well understood factors which, to my knowledge, intervene in the preparation of the plate, and render necessary the use of more or less soluble bromide in development.

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[*] Read before the Société Photographique du sud-ouest (France).

First Factor: *Proportion of bromide of silver and gelatine.* The larger the quantity of gelatine in proportion to that of silver bromide, the less bromide will be needed in the developer, the other conditions remaining the same. The limit varies between 15 of Ag. Br. to 10 of gelatine, and 15 of gelatine to 10 of Ag. Br

The proportion which I have found most suitable is :10 of Ag. Br. to 10 of gelatine.

Second Factor: *The light in the laboratory where the plates are prepared.* This should be as red and as feeble as possible, and the plate should be exposed to it for the least possible time; the day when plates can be prepared automatically and in total darkness, will see realized the ideal conditions for the production of very sensitive plates, and it is probable that in operating in this way we shall arrive at a degree of sensitiveness at present almost incredible.

The same emulsion being spread upon glass in two laboratories differently lighted, the resulting plates from the one most dimly lighted and in which the plates remained the shortest time will yield the finest negatives and require the least bromide in the developer.

Third Factor: *Duration and temperature of drying.* The plate should be dried as quickly as possible, in a temperature which should never exceed 15° centigrade (59 F.) for a very sensitive emulsion; the quicker a plate can be dried, at a low temperature, varying between 4° and 15° Cent. (39° and 59° F.) the less soluble bromide will be needed in the developer; thus plates prepared in winter always give cleaner negatives than those prepared in summer, other things being equal.

From the preceding it is easy to deduce the causes which render necessary the employment of bromide in development. It frequently happens in developing without the restrainer that the negative requires after-intensification, a very ticklish operation for many operators. The image under these circumstances, *i. e.*, developed without bromide, seems to be formed less in the interior of the film than when the retarder is employed.

Thus, a plate cut in two equal parts, of which one is developed with bromide, the other without, in the first the image will be visible on the back of the plate, while the second will not, or to a much less extent.

From this we must conclude that the image in the second case is much more superficial than in the first, and that is the reason why negatives generally lack sufficient intensity.

To obviate this defect it suffices to leave the negative, slightly washed after development, standing on a rack for some time before fixing; in this case an action goes on somewhat similar to that which takes place in carbon prints after exposure to light; the image gains intensity with time, and this action is already perceptible at the end of a *quarter of an hour*; this phenomenon has been lately indicated in the *British Journal.*

I have the honor to submit for your inspection a negative made the day of the races at Angoulême, developed without bromide; as you can judge by the image, it was made on a very rapid plate and with an objective diaphragmed to $\frac{f}{14}$ I estimate the time of exposure at $\frac{1}{250}$ second.

Apropos of the above paper M. de la Laurencie observed that, according to his experience, there was a fourth factor which must be taken into account in the preparation of gelatino-bromide by the precipitation method, and that is, the fineness of the grains held in suspension by the decantation water. When these grains reach a size of .06 mm. at the moment of uniting with others a high degree of rapidity is the result.

Two emulsions made in the same manner, under the same conditions, but allowed different lengths of time to deposit the molecules of Ag. Br., will be of very different degrees of rapidity. It would seem that one had ripened more than the other.

The washing water, although clear to the naked eye, is not so under a powerful microscope. Moreover, the presence of these infinitely small molecules seems to reduce the tendency to fog, even with very rapid plates, and permits, according to the experience of M. de la Laurencie, of developing with a very small proportion of bromide.

* * *

LANTERN SLIDES.

The introduction of a *chloride* into emulsions is by no means a novelty; but it is not generally practiced, even among *gelatino*-bromide workers. Those who have successfully introduced chlorides into gelatine emulsions have rarely discontinued the addition, as there are several marked advantages accruing from the presence of a chloride in conjunction with a bromide; and it is this very circumstance that tempted us to work out a formula for a collodion emulsion which should include chloride as well as bromide of silver.

In collodion emulsion making, unfortunately, the number of haloids available is somewhat restricted, much more so than in gelatine emulsion work, owing to the insolubility of many of the haloid salts in either alcohol or ether. Some are quite insoluble, whilst others are only soluble in the presence of so large a percentage water in the alcohol and ether employed as to make these solvents almost useless for collodion emulsion purposes.

It is, above all things, necessary to keep down the quantity of water that must, per force, find its way even into a collodion emulsion; and especially does this apply when it is intended to employ that emulsion by using it up at once as an *unwashed* emulsion, because an undue preponderance of water in the emulsion will give rise to crapy lines or structure in the films. Hence we urge what ought to have been mentioned in the last article—viz., the use of solvents of low specific gravity, and of haloids soluble in alcohol and ether, and also the *minimum* of water in making the alcoholic solution of nitrate of silver.

In *zinc bromide* and *cobalt chloride* we have two salts soluble in alcohol, although both are also deliquescent at ordinary temperatures, and these are the haloids we use in making our

Collodio-Chloro-Bromide Emulsion with Free Bromide.

Quantities.

Pyroxyline (Hopkin's)	48 grains
Absolute alcohol	4 ounces
Ether, methylated (.725)	4 “
Zinc bromide (dried at 212° F)	100 grains
Cobalt chloride	5 “
Nitrate of silver	150 “

Employment.

Into a suitable 10-ounce, wide-mouthed, clean dry bottle (with a nice soft cork), place the 48 grains of cotton, and pour thereon the 4 ounces of ether, but only 2 ounces of alcohol. When the cotton dissolves, weigh out the zinc bromide and cobalt chloride, and shoot them into the bottle, and shake them until dissolved. If the solvents are pure, the cobalt chloride will dissolve in blue streaks. Make the alcoholic solution of the 150 grains of silver, as directed in the last article—*i. e.*, by putting the said 150 grains into a small boiling flask with about 20 or 30 drops of distilled water, boiling it over a spirit lamp until solution takes place, and then cleverly getting 1 ounce of alcohol in without causing the silver to separate in flocculent crystals.

At the risk of repetition, we place some stress upon this operation. It is really a very nice little bit of chemical manipulation which the learner in photographic chemistry would do well to practice in order to acquire the knack of producing an alcoholic hot solution of nitrate of silver. Let the silver solution boil before adding it, drachm by drachm, to the collodion; each addition will make the surface ether in the bottle boil, but that is of no consequence. Shake between each addition of silver vigorously, and get the whole of the ounce of alcoholic solution of silver in within two or three minutes, corking between each addition, and making each addition at the boiling point of alcohol. A splendid, rich, and creamy emulsion will be the result. The whole now lacks one ounce of a solvent—alcohol—to bring it up to the orthodox thing for eight ounces of emulsion. If the formation of the emulsion goes right, and there is no indication of precipitation, this final ounce of alcohol may be added as soon as the silver has been safely got in. The method of employment here set forth has for its object to leave the emulsion minus this ounce; in fact, if the bottle be graduated it will be found to be about an ounce and a half short—the half ounce is evaporated ether, caused by additions of boiling alcohol—so that the experimenter would do the right thing to see that if the eight ounces are to be made up scrupulously, there should be ether added as well as alcohol. The formula is framed so that six grains of cotton shall be present in the complete ounce of emulsion—there are actually eight grains per ounce present when the silver is about to be added—this is all intentional. It is more facile to form the emulsion in a strong collodion; a weak collodion will not hold up the chloride; a strong collodion permits of being afterward brought down to any degree of creamy or milky condition of the emulsion desirable; whereas a weak collodion which is just on the verge of precipitating its "load" of silver haloid cannot be "stiffened" up so readily as the converse operation. Emulsions made with zinc bromide have a very awkward trick of precipitating the silver bromide, for reasons not exactly known.

Further, it is probable—yea, very likely—that the experimenter will elect to leave it at seven ounces, by merely adding half an ounce of ether when the emulsion is cool. We have timed ourselves from the moment of sitting down before the scales to compound this emulsion, and from the moment that we commenced until the said emulsion was complete, barely half an hour had elapsed before we had got a quarter-plate glass and had coated it and immersed it in our washing tray (to free the film from the salts of decomposition), and after a few minutes' washing we have exposed the plate in the camera and developed it; and this was done whilst the emulsion was actually *warm* from the act of adding the hot solution of silver! We have more than once regulated the condition of emulsions made as just described by adding thereto *plain* collodion made from other cottons, and of two or three grains of such cottons per ounce of solvents. Some, a year in solution, proved old and rotten. It will thus be seen that the employment at first of strong collodion has many advantages.

The resulting emulsion is of grand quality; it gives good, rich, creamy films, tough withal, partaking not of the skim-milk, sky-blue quality, we have seen so often.

This emulsion, containing chloride of silver, is quite four times more rapid than one made without the chloride; that the chloride is actually present in the films can be abundantly proved if it were necessary. It ripens quickly, develops easily, gives very clean, robust images when developed with

Pyro	1 grain
Bromide	¼ “
Ammonia	1 minim
Water	1 ounce

and, despite quick gelatine plates, we firmly believe that there is much to be done with collodion yet, in the way of making it rival gelatine in rapidity; not that rapidity is essential for films for lantern slides, but rather as proving the theory that the first impact of light can produce an effect upon a sensitive surface, which is thence entitled to be called rapid or slow accordingly as to whether that image can be developed easily or the opposite. At any rate, a given film, which will receive a readily developable image of robust quality, with a minimum of light, must surely be entitled to be called good.—*Photographic News.*

Mechanical Appliances.

ON A MODIFIED FORM OF TRIPOD.

BY JOHN HARMER.

The photographic tripod stands, as now commonly employed, answer well for general purposes; but there are many special cases where none quite fulfill the conditions required. Those with fixed heads are all right for working upon firm and moderately even ground; but to level the camera upon one on beach or loose and uneven soil is no easy matter, and takes up much time. The adjustable head is an improvement upon these; but still there is waste of valuable time in leveling the camera, for very few photographers avail themselves of the circular level to assist their judgment and insure accuracy in this particular. How great a proportion of architectural photographs are spoiled by distortion from this cause alone, the lens often being blamed for defects of this character entirely attributable to slight tilting! The ball and socket, as hitherto constructed, labors under the same disadvantage. Not any of the above are suitable for photographing from boats or any swaying platform, because the rigidity of the tripod head makes the camera a fixture to the boat, and causes its point of sight to be changed skywards or waterwards as the boat pitches and rolls.

The modification of the tripod or addition to the ball and socket (whichever you like) I wish to bring to notice will be without these defects, the portion of head bearing the camera either swinging free of the other portions or being made rigid at will. It consists in drilling an inch hole through the triangular piece (about two inches thick) to which the legs are fastened, and, further, in turning out the top of the hole into a hemispherical hollow about two inches in diameter, and in slightly coning out the hole on the other side of the piece. This is the seat for the ball. A cap of metal, with a cavity of like dimensions and drilled with an aperture of an inch and a half or more, to be strongly but loosely hinged to one side of the first named hollow and a set-screw on the other, secures and binds the ball. This completes the socket, which is in all respects similar to others, excepting that it has a larger opening underneath.

The ball of wood or metal to fit the socket is turned upon a rod which projects to the extent of fifteen or eighteen inches, with a thickness of from five-eighths to three-quarters of an inch, on one side of the ball, and about three inches on the other, but conical from the ball outwards to give strength and substance for framing it securely to the board which is to bear the camera. the ball is then placed in the socket by passing the long end through the hole, the cap is placed over, hinged, and the binding screw fixed. The lower end of the rod being furnished with a hook, an india-rubber door spring, with string and loop, completes the tripod.

Its use is as follows:—When set up the foot is placed in the loop and the binding-screw released, and the camera is immediately drawn level and clamped. If used on shipboard a weight is hung upon the hook and the binding-screw unfastened. The head is then free to accommodate itself to the motion of the ship by retaining its level in all circumstances of pitching, tossing, and rolling, to which the platform supporting the tripod is subject.

For ordinary use the camera case would be sufficient to keep it steady, and one might always rely on the instrument being level. The head may be made in metal or wood—if the former, cast hollow, and all superfluous portions removed to keep down weight.—*The British Journal of Photography.*

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HINTS ABOUT CORKS.

A cork should always be as far as possible adapted not only to the bottle or jar it is intended "to stop," but also to the fluid or substance intended to be preserved Thus very volatile liquids can be kept far better without material loss with the aid of a really good cork properly prepared for its work than if a glass stopper of the average badly-fitting kind be employed. We will presume that everybody nowadays knows how to soften corks by "pressing" and boiling, etc., and also how to select good ones. If good sound corks, after being thoroughly "soaked," be immersed for a few hours in water at 140° F., containing about one-half per cent of gelatine and four or five per cent glycerine, and are then taken out and dried carefully, it will be found that the loss of any volatile fluid, such as chloroform, ether, or petroleum spirit, kept in the bottles stopped with corks so treated will be comparatively insignificant.

Corks are discolored and rendered friable by various chemical solutions, nitric acid, tincture of iodine, and the permanganates being amongst the worst offenders in this respect; they may be protected and rendered proof against the action of acids, alkalies, and oxidizing agents, by (after "softening" them in the usual way) drying them and allowing them to digest at about 120° to 140° F. in a mixture of seven parts of vaseline and two parts of white paraffine wax until, when pressed under the warm fluid, no air bubbles are emitted from them. After being gently wiped and allowed to cool, the corks ready for use, and they will then be found to resist corrosive liquids in the cold.—*Monthly Magazine of Pharmacy.*

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WHEN Rejlander was down with his last illness a messenger arrived from a photographic stock house, with a note to say that unless payment of an account was made by a certain time, legal proceedings would be taken.

"Bring the camera!" said Rejlander; and a wonderful picture was taken of him as he sat up in bed with bared breast, disordered hair, and the mark of the hand of death upon him. Shortly before his last hour the picture was sent with the message, "Take your pound of flesh from that!" —*Photographic News.*

It is to be hoped that "cabinets" and other portable sizes will not generally go out in favor of the "heroic" and "colossals." Should popular taste, generally, follow the lead of "La Belle Americaine," giving away one's photograph will become a most elaborate process, demanding the intervention of a furniture van at the very least. And to receive one of these "photographs of the future" will be as awkward to most people as the receipt of a white elephant or a full-sized billiard table is now found to be. Few, in fact, will care to undertake the responsibility of receiving a friend's likeness, when its receipt involves running up a special wall on which to place it.

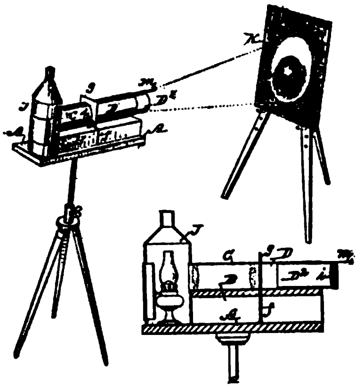
◆

To remove silver stains from clothing, immerse the stained fabric for a few minutes in a concentrated solution of chloride of copper, then rub with a crystal of sodium hyposulphite, previously dipped into ammonia which has been diluted with an equal bulk of water. If the chloride of copper solution is quite neutral, the color of the fabric will not be affected.—*Photographic News.*

Patent Intelligence.

301,232.—METHOD OF AND APPARATUS FOR TRANSFERRING AND ENLARGING PORTRAITS.

Maurice Hartsough, Des Moines, Iowa. Filed April 11, 1884. (No model.)



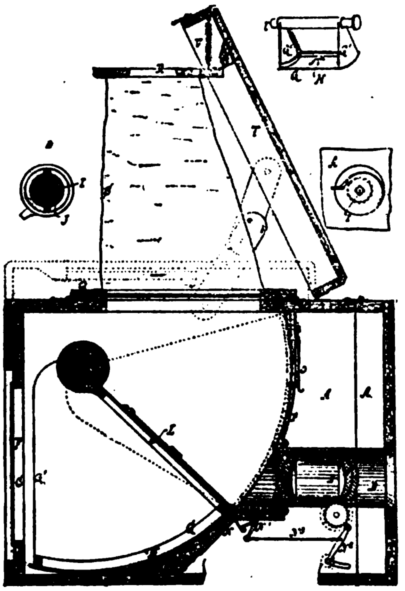
Claim.—1. The herein-described method of transferring and enlarging a photo or picture, which method consists, first, in placing a transparent glass plate or cardboard over a picture, and then tracing the picture upon the transparent plate or card with a pencil making dark lines; second, in placing the transparency thus prepared in a tube to intercept rays of artificial light in rear of an adjustable tube carrying a lens and a canvas at some distance from the lens; third, in adjusting the lens relative to the canvas and light to focus the reflected rays and regulate the size of the shadow-picture transferred from the transparency to the canvas by the rays of light passed through the transparency and the lens; fourth, in tracing the lines of the shadow-picture upon the canvas with a pencil to fix the shadow-picture upon the canvas.

2. An instrument for transferring and enlarging pictures, composed of a portable base, two fixed open-ended tubes having an open space between their contiguous ends adapted to receive a transparent card or glass plate, a sliding tube within one of the fixed tubes carrying a lens in its outer end, and a case adapted to inclose an artificial light and direct the light through the tubes in the manner set forth.

3. The combination of the base A B, having a slot *f*, the fixed tubes C and D, the sliding tube D², carrying a lens, *i*, and a handle, *m*, and a lamp-case, J, substantially as shown and described, for the purposes specified.

301,400.—PHOTOGRAPHIC CAMERA.

Calvin Rae Smith, New York, N. Y. Filed April 17, 1884. (No model.)



Claim.—1. The combination, substantially as hereinbefore described, of the camera-box having a lens opening and plate-opening in opposite sides and a focusing-glass in the top, the swinging shutter adjacent to the lens-opening having an exposure-opening to register therewith, and the mirror arranged on the shutter to reflect the image in the focus of the lens on the focusing-glass when the shutter is moved to an opened position.

2. The combination, substantially as hereinbefore described, of the camera-box having a lens-opening and a plate-opening in opposite sides and a focusing-glass in the top, the swinging shutter adjacent to the lens-opening having an exposure-opening to register therewith, the mirror arranged on the shutter to reflect the image in the focus of the lens on the focusing-glass when the shutter is moved to an opened position, the axial spindle of the shutter, the spring arranged on the spindle to force the shutter from an opened to a closed position, and the catch arranged to engage the shutter in its opened position.

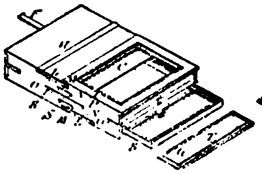
3. The combination, substantially as hereinbefore described, of the camera-box having a lens-opening and plate-opening in opposite sides and a focus-glass in the top, the swinging-shutter adjacent to the lens-opening having an exposure-opening to register therewith, the mirror arranged on the shutter to reflect the image in the focus of the lens on the focusing-glass when the shutter is moved to an opened position, and the catch arranged to engage the shutter when its exposure-opening registers with the lens-opening.

4. The combination, substantially as hereinbefore described, of the camera-box having a lens-opening and plate-opening in opposite sides and a focusing-glass in the top, and having the side containing the lens-opening made in the form of a door, the swinging-shutter adjacent to the lens-opening having an exposure opening to register therewith, the mirror arranged on the shutter to reflect the image in the focus of the lens on the focusing-glass when the shutter is moved to an opened position, and the partition dividing the shutter from the door of the box.

5. The combination, substantially as hereinbefore described, of the camera-box having a lens-opening and plate-opening in opposite sides and a focusing-glass in the top, the swinging shutter adjacent to the lens-opening having an exposure-opening to register therewith, the mirror arranged on the shutter to reflect the image in the focus of the lens on the focusing-glass when the shutter is moved to an opened position, the lid hinged to the box above the focusing-glass, the eye-piece hinged to the lid, the opaque bellows connecting the eye-piece to the box above the focusing-glass, and the spring connecting the eye-piece to the lid.

301,983.—Portable Photographic Apparatus.

Warren Harris, Danville, Vt. Filed July 19, 1882. (No model.)



Claim.—1. A photographic plate-holder havingt wo apartments, with an opening for exposing the plates on each side and at opposite ends, substantially as described and set forth.

2. In a plate-holder with two apartments, the double back with an interior space, into which the slide C may be drawn, substantially as described, and for the purpose set forth.

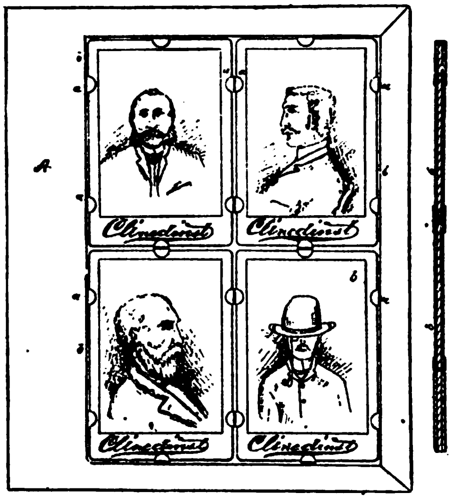
3. In a plate-holder with two apartments, the interior movable partition, substantially as described and set forth.

4. The combination of slide I, levers L P, and the movable partition, substantially as described, and for the purpose set forth.

5. In a portable photographic apparatus for taking pictures on dry plates, the combination of folding camera-body, hinged front, plate-holder with two apartments, openings for exposure at each end and on opposite sides, sliding partition, double plate frames with single grooves, and with shoulders in openings, all substantially as described and for the purposes set forth.

302,104.—Means for Mounting Photographic Cards.

Barnett M. Clinedinst, Baltimore, Md., assignor to Thomas H McCollin, Philadelphia, Pa. Filed March 19, 1884 (No model.)



Claim.—1. The combination of a sheet or base of card or other paper-board, and flexible ears or clips, substantially such as described, adapted to be bent to clamp the edges of cards and hold them against the face of the sheet, as specified.

2. The combination, with a sheet of paper-board of a number of flexible ears or clips arranged with relation to the sheet and with each other, as shown and described, whereby a number of cards may be clamped and held with their edges adjacent to each other for simultaneous display, substantially as described.

3. The combination, with a sheet of straw or other board, of clips of flexible material extending through said boards, adapted to be bent over the edges of cards on opposite sides of the sheet, substantially as described.

4. The combination, with a sheet of paper-board provided with a raised border, of flexible clips adapted to be bent over and to clamp the edges of cards or pictures, substantially as described.

301,706.—Process of Preparing Canvas for Photographing.

Thomas D. Fitzsimmons, Philadelphia, Pa., assignor of one-half to Robert W. Witham, same place. Filed Feb. 20, 1884. (No specimens.)

Claim.—1. The herein-described process of preparing canvas and similar material, so that a photograph may be taken thereon, consisting of coating the surface of the canvas with ordinary paint mixed with megilp, varnish, or a similar material, and afterward covering the painted surface with collodion, and submitting the prepared surface to a bath of nitrate of silver solution, substantially as shown and described.

2. The herein-described process of photographing upon canvas and similar materials, consisting of painting the surface of the canvas with a mixture of ordinary paint and megilp, or varnish, coating with collodion, then submitting it to a bath of nitrate of silver solution, afterward placing the prepared canvas in position in front of a camera having a negative of the picture to be taken placed in the back part thereof, said camera being placed in front of a window in a room from which the light has been excluded, except as it strikes the lens of the camera after passing through the aforesaid negative, substantially as described.

◆

Colored Photographs on Glass.

The exceedingly delicate colored photographs on glass, says an engineering paper, which have come into fashion somewhat of late, are produced by fixing a paper photograph upon a cushion-shaped glass with transparent cement, and when it is dry rubbing away two-thirds of the thickness of the photograph with sand-paper. The thin film left is then rendered transparent by soaking in melted paraffin wax, after which transparent colors are applied, which appear softened down when looked at from the front. The background and heavier portions of the picture are then painted in body color upon the face of another cushion-shaped piece of glass, which is afterwards fixed behind the first one.

An improvement in this process has just been made by Mrs. Nelson Decker, daughter of the late C. F. Varley, F. R. S., and the first of the young members of his family to have produced a scientific novelty. She has just discovered that the second sheet of glass may be abolished, a better artistic effect produced, and the picture rendered more permanent by being protected from the action of the air and deleterious gases by being wholly embedded in paraffin. She does this by quickly dipping the photograph in paraffin a second time after the transparent colors have been applied, and painting the heavier colors upon the back of this second coat. A third layer of paraffin is then applied, and the background painted upon that; this third coat may be finally protected by yet another layer of paraffin. Some practice is necessary to acquire the knack of doing this efficiently. It must be done quickly enough not to remelt previous layers, and the plate must, after each dipping, be quickly tilted on end in such a manner that the paraffin does not run into ridges and thickened lines, but forms an even coating.

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The metric system bids fair to ultimately become universal, and at the present time it is the only recognized legal standard in twenty-two countries; these having a total population of two hundred and forty-two millions.—*Photographic News.*

PHOTOGRAPHY.

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Fifth Annual Convention and Exhibition of the Photographers' Association of America.

We publish in this number all the papers which were read before, or presented to, the Cincinnati convention, and also give the first days' proceedings in full.

In our next we shall publish the proceedings of the remaining sessions.

We may mention, however, that nothing whatever of interest transpired, beyond the election of officers and the adoption of amendments to the constitution and by-laws, requiring all new members hereafter to pay an entrance fee of $3, and annual dues, $2, except employes, who will be required to pay the annual dues, but no entrance fee. Failure to pay the annual dues before the adjournment of the convention in each year, deprives the delinquent of membership. He can be reinstated only on payment of the initiation fee, the same as a new member. A local secretary is also provided for.

The officers for the ensuing year are:

President, James Landy, Cincinnati, O.
Secretary, Leo Weingartner, Cincinnati, O.
Treasurer, G. M. Carlisle, Providence, R. I.
Executive committee: Joshua Smith, Chicago, Ill.; W. A. Armstrong, Milwaukee, Wis.

The next convention will take place at Buffalo, N. Y. Local secretary, H. McMichael.

The above convention opened in the Music Hall and Exposition Building, Cincinnati, O., on Tuesday morning, July 29, 1884, and closed, so far as the convention was concerned, on Thursday afternoon, July 31st, the exhibition of pictures and apparatus remaining open until Friday night. Farther on will be found a report of the proceedings and papers read.

We propose here to give some account of the exhibits, and we will take first the pictures sent in competition for the prizes offered by the dry-plate manufacturers, commencing with those from negatives on Inglis plates.

ELTON, PALMYRA, N. Y.

Portraits, Groups and Genre.

Some pictures of children being probably the best specimens. One, a head and shoulders of a child, with her face leaning against a pug dog, and a separate picture of the pug himself, are some of the most noticeable, but perhaps the gem of the entire collection is a little girl in an immense straw hat, carrying a basket of eggs.

Most of these pictures are on 8×10 and 11×14 plates. Some large work by the same artist we hardly like so well, although two pictures of old gentlemen, one a bust, the other three-quarter length, are very good.

MR. SEDGEWICK, ZANESVILLE, O.,

had a frame marked "Every day work on Inglis plates." Presuming that this is intended to disarm criticism, we pass it over.

COOK ELY, OSHKOSH, WIS.

A frame of fifteen 14×17 pictures, mostly vignette heads and busts, but including some good examples of genre work; one, an old gentleman, dancing a little girl on his foot, being very effective, while another, representing a girl mending her brother's pants, torn in some mischief, (an out-door scene) is perhaps still more so. The position of the tree in this picture is a little unfortunate, and in this respect a companion group of three opposite to it "composes" much better and is, we are inclined to think, the gem of the collection.

COMPETITION FOR NORDEN PRIZE.

LEO WEINGARTNER, CINCINNATI, O.

A large number of 16×20 portraits, mostly busts, one or two of which are decidedly good, but the majority do not exactly please us. The best is probably a bust of an old gentleman.

J. J. KIRKNESS, BALTIMORE, MD.

Some fine 20×24 architectural and out-door views, one representing the terminus of the York River and Piedmont Air-line, at Baltimore, evidently made almost instantaneously.

C. W. MOTES, ATLANTA, GA.,

showed some nice work in 7×14, 14×17 and 16×20 portraits, statuary style and otherwise, which have a fine, artistic effect; they are soft yet brilliant, while the poses are generally graceful and pleasing. Mr. Motes is making a specialty of statuary pictures, and is certainly achieving success.

D. R. CLARKE, INDIANAPOLIS, IND.

This exhibit must certainly take a high rank amongst the work shown at Cincinnati.

It was rendered conspicuous by a number of life-size, three-quarter length portraits—direct prints from negatives 26×42 inches—and some life-size heads from 20×24 negatives. We are inclined to think these heads the gems of the collection, but a 26×42 genre group, representing a game of chess, is especially commendable. The attitudes and expressions are in perfect harmony with the subject depicted, while the lighting and technical execution are excellent.

STRAUSS BROS., ST. LOUIS, MO.

Exhibit consists generally of 16×20 busts, with two or three genre subjects. Rather inclining to hardness.

THOMPSON, KANSAS CITY, MO.

Good ordinary work. A large vignette head of a lady is good in lighting and technical effect, but the pose might have been improved. It is, moreover, a case of "retouched to death."

THE CRAMER COMPETITION.

This embraces a large number of exhibits, and some of them quite extensive.

RICHARD WALZL, BALTIMORE, MD.,

had an extensive collection of portraits of various sizes, some decidedly good, others rather indifferent, but all characteristic.

THE BALTIMORE INSTANTANEOUS VIEW CO.

had a collection of 5×8 views, some of which are quite artistic.

IRVING SAUNDERS, ALFRED CENTRE, N. Y.

A 5×8 portrait of an old gentleman reading is admirable.

Several cabinet heads are perfect studies in lighting and models of *artistic* retouching.

A 16×20 head and shoulders of a child, sleeping with head resting on table, is a charming study. The collection embraces only one view—a 5×8—but it is a beauty.

PORTER, COVINGTON, KY.,

exhibited a frame containing twelve 8×10 views, —six summer and six winter scenes—which, with the exception of one that is slightly undertimed, are simply perfect.

We may mention that Mr. Porter's exhibit included some daguerreotypes of Fairmount Park and vicinity, made in 1848. They are beauties.

MCCRARY & BRANSON, KNOXVILLE, TENN.

Cabinets, long panels and 7×14. Very fair work, notable for absence of excessive sharpness. Good plastic effect. Lighting on some of the large heads and busts very effective.

WALKER, PHILADELPHIA, PA.

Eight 14×17 portraits, full-length, three-quarter and bust. These arrest attention at once by their originality of treatment, and will repay close inspection. Some of them are charming studies.

C. HEIMBERGER, 103 PEARL ST., NEW ALBANY, IND.

A series of stereo, 6½×8½, 8×10 and 11×14 views of New Albany and vicinity, including scenes on the L. E. & St. L. R'y. One of these, an 8×10 landscape with mill and mill dam in foreground, is very fine, while some of the others are very fair, and an 11×14 of the approach to one of the tunnels decidedly good.

His flood views, while interesting as curiosities, do not claim special notice as pictures.

BLESSING & KUHN, BALTIMORE, MD.

This display does not call for special mention, except a full face bust of an old gentleman, labelled, "My first 14×17, 1882. Developed in the hand like a wet plate." This is something more than creditable for a first attempt.

HARDY, 493 WASHINGTON ST., BOSTON, MASS.

Two large pictures, bust and three-quarter length, of Jas. G. Blaine, are the most notable. May be called half-Rembrandts, and are good examples of that style of lighting.

H. ROCHER, CHICAGO, ILL.

Portraits, from cabinets to 16×20. Some of these are very artistic, especially in pose, but others are not exactly satisfactory. His figures in many cases have the effect of bas-reliefs stuck on to the background; perhaps this is intentional, but at any rate we do not like it.

On the whole, we think Mr. Rocher should have had a better display.

J. E. HALE, SENECA FALLS, N. Y.

Fair ordinary work. Calls for no special mention.

B. F. BATTELS, AKRON, O.

This artist has some large work, a little better than ordinary, including two old gents and four children.

D. A. CLIFFORD, ST. JOHNSBURY, VT.

All views, mostly 5 × 8 and 8 × 10, including some interiors. A tendency to hardness as a general thing, but some of them are very pleasing, the effects of light being excellent, while the whole series is noticeable for uniformity of tone in the prints. The exhibit includes two very good 14 × 17's of the engine and coach running on the Mt. Washington Railway.

PAUSEY, NEWARK, O.

The expression "good ordinary work" will apply here, with the exception of a 14×17, of a child, and another (same size) representing an arrangement of funeral flowers. The latter, especially, is decidedly better than ordinary work.

O. M. PAUSCH, NEWARK, O.

Large head and 14×17 group; collection of stereos from negatives made in Germany.

Amongst these stereos are some good things but many of them are undertimed.

HERMANN WUNDER, BROOKLYN, N. Y.

Frame of 11×14 portraits; busts, full length and groups, including quite a number of children. Good technical work, but, with one or two exceptions, not much to be said for posing.

BUSHBY & MACURDY, 521 WASHINGTON ST., BOSTON, MASS.

Cabinets and larger work. Good average work; not calling for any special mention.

J. M. LANDY, CINCINNATI, O.

Portraits and groups, all sizes, from cabinets to 20 × 24.

Taking the average of the cabinets we must confess to a feeling of disappointment.

Some of the large work is better, but even this hardly came up to the standard we expected.

Mr. Landy exhibits a large number of views of the floods of 1883 and 1884, mostly on 8 × 10 plates, but including some 20 × 24. These, considering the difficulties under which they were made, are excellent.

J. A. SCHOLTEN, ST. LOUIS, MO.

Fine display of portrait work in various sizes, including some character subjects.

O. P. SCOTT, QUINCY, ILL.

Very creditable collection of 14 × 17 and 16 × 20 busts.

GILBERT & BACON, PHILADELPHIA, PA.

Very fine 14 × 17 portraits, full lengths and busts Some children specially good. This exhibit is notable for roundness, softness, and brilliancy combined. Posing admirable.

COMPETING FOR BOTH CRAMER AND NORDEN PRIZES.

F. W. GUERIN, ST. LOUIS, MO.

Very large and fine display, embracing all sizes of work. A good deal of "fancy" and genre work. Some very successful examples of the latter, including a boy fishing, boys see sawing, girl at a well, etc. Most of these are 18 × 22. There are also some charming portraits of the same size.

Mr. Guerin's work is characterized by artistic taste in posing and lighting, and by soft, yet brilliant chemical effects.

WORK ON CRAMER & NEIDHARDT PLATES.

MAX PLATZ, CHICAGO.

All Sizes up to 18×22.

The chemical work here is excellent, while the artist's strong individuality in the matter of posing and lighting is forcibly brought out. The poses may, or may not, be artistic, but they are certainly pleasing, original and unconventional. Some of the large work we presume should strictly be classed as genre. The peculiar charm of many of these pictures is the harmony between the figure, or figures, and the background, which imparts naturalness to the whole and entirely removes the effect of being "made up" under a sky-light. This is specially notable in the case of a girl, standing, looking up at a dove in a tree above her.

OUT OF COMPETITION.

G. CRAMER, ST. LOUIS, MO.

On Cramer plates, of course. If this exhibit had been included in the competition, there would have been very little show for any one else. It undoubtedly included some of the very best large work in the exhibition, while in extent it was probably unsurpassed. A large number of examples of genre work, mostly 20 × 24. Amongst them "Baby's Pets," "Saturday Evening," "Sunday Morning," "Punch and Judy," etc.

"Cinderella" is, we think, the happiest in conception and most successful in execution of any of them; it is remarkable in that the central figure is given its proper importance, without being unnecessarily emphasized. The pose is particularly graceful, and the artist was very fortunate in finding so good a model. "Coasting" we do not like quite so well; and there is something strained about "Sleeping Beauty." "Success," and "Fiasco" are charming as bits of expression.

Amongst the portraits proper, a half length of an old gentleman, seated, is almost inimitable.

J. H. Kent, Rochester, N. Y.

Examples of work from negatives on Eastman plates. Embraces portrait work of all sizes, from cabinets upward, and, as a whole, unsurpassed by any other collection of similar work in the building. Some of the best specimens were rather unfortunately placed as regards light, so that they could not be seen to advantage.

Mr. Kent's strong point is undoubtedly his lighting, but his poses are nearly all excellent, and great taste is displayed in arrangement of accessories.

One 16×20 head and bust of a lady Mr. Kent considers his masterpiece in the line of large work. It is a Rembrandt effect, with light background and very peculiar treatment. Some of the other large work, however, is little, if any, inferior. Some of the smaller work is marked by extreme delicacy of modelling. This, indeed, applies to the entire exhibit. One picture, about 8×11,—group of lady and child—is one of the most beautiful things we have seen.

Sherman Gregg, Rochester, N. Y.

Also on Eastman plates. Some magnificent life size heads. Some show evidences of slight under-exposure, and nearly all owe a great deal to the retoucher.

Dixon, Toronto, Ont.

Quite an extensive exhibit of glacé work, portraits and views, stereo. to 14×17. Very nice rendering of drapery in some of the portraits. Some of the view work is very good, but doubtless owes some of its brilliancy to the enamelling.

Wykes, Grand Rapids, Mich.

NEIDHARDT PLATES.

Portrait work, cabinets upwards; some good things, including head of a darkey boy and a little girl on a lounge; but as a whole, calling for no special mention.

Pugh, Macon, Ga.

Solar Work, Plain and Tinted.

Across the aisle from this last was a very creditable collection of amateur work on Inglis & Beebe plates.

Santee & Temple, Clinton, Ia.

ROCKFORD PLATES.

Some good 6¼×8½ and 8×10 views, especially clean and brilliant; portrait work is hard.

A. S. Atchley, Rockford, Ill.

ALSO ON ROCKFORD PLATES.

Open to same criticism as last, but one 14×17 head is excellent.

J. H. Reed, Clinton, Ia.

Life-size heads on I. C. plates.

Millen, Gunnison, Col.

11×14 Views on I. C. plates.

Some good things, but generally badly undertimed.

G. H. Sherman, Elgin, Ill.

Portraits made by Van Depoele electric light. Considering that Mr. Sherman works with one light, these pictures are very creditable. Plenty of worse day-light work to be seen in the exhibition. We are sorry that we cannot say as much for the other electric light exhibit—that of

J. E. Beebe, Denver, Col.

While these pictures may be interesting as specimens of photographing under difficulties they certainly have nothing else to recommend them.

Vis à vis with the last mentioned display we found one of the gems of the exhibition—a collection of 5×8 instantaneous marine views by

Theo. Gubelman, Jersey City, N. J.

They represent steamers and yachts, large and small, single and in groups, under full steam and sail; and are certainly among the finest specimens of this kind of work we have seen.

Just beyond this was a frame marked

Campbell & Camp, Mansfield, O.

Fair ordinary work.

G. M. Shaw, Socorro, N. M.

Sends a few specimens of amateur work from that remote region. They are at least interesting as curiosities.

W. A. Armstrong, Milwaukee, Wis.,

showed a number of 8×10 landscapes, on bevel-edge chocolate mounts, marked in gilt lettering with imaginary titles, and each one in addition bearing the legend, "The Real from an Ideal Standpoint." As specimens of technical work, they were, almost without exception, excellent, while considered as pictures they must be ranked above any other collection of landscape work in the exhibition. They are works of art, not mere photographs; while the subjects are usually simple in the extreme. The titles of some of them are: "Tired of Browsing," "Enchanted Drive," "Only as far as the Gate," "A Subject for Reflection, etc." We recommend every landscape photographer, professional or amateur, who, not being present at the convention, failed to see these pictures, to send to Mr. Armstrong for copies of some of them; they are worth many times their price to any one with ambition to improve his work.

WILFRED A. FRENCH (AMATEUR), BOSTON, MASS.

Famous homesteads of colonial period, Boston and vicinity. $6\frac{1}{2} \times 8\frac{1}{2}$ views on Carbutt's plates. A little hard, but very fair work.

HARRY SUTTON, MILWAUKEE, WIS.

Portraits, various sizes, on Rockford plates. Fair ordinary work.

BLUNT, DANVILLE, VA.

Portraits; may be classed with the last exhibit.

MRS. E. N. LOCKWOOD, RIPON, WIS.

"EGYPTIAN PHOTOGRAPHS."

The peculiarity of these consists in their being taken against a black background. The effect is somewhat novel, and certainly effective. Most of the work is characterized by excessive retouching.

F. GUTEKUNST, PHILADELPHIA, PA.

(1) Phototypes. Portraits and views, cabinets to 8×10. Good examples of the process, which we believe is worked exclusively by Mr. Gutekunst.

(2) Window transparencies. Carbutt's A plates.

Some of these are a little flat, whether resulting from under-exposure or weak negatives, we cannot say; but most of them are magnificent.

We assert, without fear of contradiction, that the views of Smithsonian Institute, and army and navy buildings, Washington, D. C., especially the latter, have never been surpassed by wet collodion. These are on 18×22 plates.

PLATINOTYPES. WILLIS & CLEMENTS, PHILADELPHIA, PA.

(1) Two frames of twelve $6\frac{1}{2} \times 8\frac{1}{2}$ prints each; portrait, architectural and landscape subjects.

To those who hold that platinum is only suitable for large work, we commend a study of these pictures. Some of them possess all the beauty of fine steel engravings, and we prefer the tone to that usual with silver prints. Negatives (on Carbutt plates) by Geo. B. Wood, 5502 Germantown Av., Philadelphia.

(2) Three 20×24 prints, from negatives by Jas. Zellner, Mauch Chunk, Pa.; views of Mauch Chunk and vicinity.

We have never seen anything in silver we liked so well; of course they are printed from magnificent negatives.

(3) Solar work, various operators. Includes a 26×36, full length, by Hoyt & Siebert, from negative by Sarony. This is very effective when viewed from a distance proportioned to its size.

(4) Printing on silk and linen; showing the capabilities of the process in this direction.

We do not claim to have noticed every exhibitor of pictures in the above list, or to have made it in any sense a catalogue. Indeed, we had not sufficient time to inspect all of them. But we do not think anything of importance has been overlooked.

It should be noted, however, that in connection with the Cramer competition, a large proportion of the negatives from which the competing prints were made, were also exhibited, and in such a position and light that they could be most carefully and closely examined. In this category were included all the negatives of Mr. Cramer's genre subjects.

The value of this exhibit of negatives to any photographer seeking to become a master in dry-plate manipulation, was almost incalculable.

The Eastman Dry-plate Co. exhibits a few negatives, including some large heads by Mr. Sherman Gregg, and two sets of 50 cabinet heads, made at one sitting, which are shown to illustrate the uniformity that can be attained in dry-plate work. There is certainly very little variation. These negatives were used to illustrate *Anthony's Bulletin*.

MISCELLANEOUS EXHIBITS, APPARATUS, MATERIALS, ACCESSORIES, ETC.

The main hall of the building was devoted to this department, and, with the lobby and corridors adjoining, was pretty well filled. Very little in the way of novelties could be found.

On entering, the visitor's attention was first attracted by the backgrounds and accessories. A number of backgrounds—landscapes, interiors, etc.—by Spurgin, of St. Louis, were exhibited by P. Smith & Co., of Cincinnati.

N. C. Thayer, Chicago, had quite a collection of backgrounds. Grabach, Clyde, O., and W. F. Ashe, New York, had a considerable display of this kind of goods, while Lehmann & Brown, N. Y., show both backgrounds and accessories.

L. W. Seavey had a large exhibit of backgrounds, furniture, accessories, etc., including an extensive collection of plaque and border negatives. Mr. Seavey advertised himself by means of a lady model, who dressed in classical attire and posed before his backgrounds.

These exhibitions took place both in the main hall and on the platform in Horticultural Hall.

Allen Bros., Detroit, Mich.,
exhibited the new Suter lens.

Sheen & Simpkinson, Cincinnati, O.

Good exhibit of Scovill's and Anthony's boxes, and general goods.

P. Smith & Co., Cincinnati, O.,
had also a good display of the above and other cameras, camera stands, apparatus and material of all kinds.

Smith & Pattison, Chicago, Ill.,
exhibit the Fawkes revolving show case, and the "magic" and "automatic" camera stands (Smith's patent), the former being designed for 8×10 and smaller boxes, while the latter, which is balanced, is intended for larger sizes.

They make a specialty of solid carved wood furniture and accessories, and direct attention to the fact that their prices for this class of goods are lower than those usually charged for similar designs in papier maché. Mr. Pattison specially directed our attention to the Duplex Rotary burnisher, for which the following advantages are claimed over any other in the market: It never scratches the print. Never rusts. Produces a better burnish. We have not tested these claims, but the principle on which the machine is constructed is certainly sound.

The Blair Tourograph & Dry-plate Co., Boston.
made a good exhibit of both their old and new style cameras, plate-holders, etc. The only novelty we saw here was a new combination portrait box, the front part of which works an 8×10 plate with the usual carriage movement, while the rear part takes a 14×17 plate. The bed of one is made to slide into that of the other, so that they may be attached or detached in a few seconds; when a long focus is required, the lens board is removed from the rear part, the carriage on the front part slid to one side, and the front end of rear bellows attached to the opening thus made. In this way it can also be used for copying. There is no carriage, of course, on the 14×17 end, which is furnished with a plate-holder, having an ingenious curtain slide made of narrow strips of mahogany, very neat and convenient. The 8×10 plate-holder is of the ordinary construction. Both parts are provided with double swing, and the milled heads for operating all the movements are arranged close together.

Scovill Manufacturing Co., New York.

Good display of their well-known camera boxes and other specialties. Mr. Pelgrift explained that, owing to the recent destruction of their American Optical Factory by fire, they had been unable to get up any novelties for this convention. They had quite a number of large boxes, including some 20×24 revolving back view boxes, which they consider the lightest box for its size yet turned out of their factory.

Mr. Pelgrift directed our attention to a 20×24 portrait box with an attachment on back allowing it to be used for all kinds of work, like an ordinary multiplying box of the "Imperial" type. It has double bellows and two plate holders.

We saw two patterns of gun camera, one provided with an ordinary drop shutter, the other with a flexible shutter operated by rubber bands inside. The "Waterbury finder" was attached to one. Amongst other things visible at this stand was a 5×8 front-rack, revolving back box, with double swing, very neatly got up.

Benj. French & Co., Boston, Mass.,
exhibit Voigtländer & Darlot lenses, (euryscopes, wide-angle euryscopes, rapid and wide-angle hemisphericals, etc.). The Garland shutter for portrait boxes, and an instantaneous shutter on the principle of the one described by Mr. Greene in the second number of Photography.

They also had on view a very large group (28×40) made with a No. 8 euryscope, by Victor Angerer, Vienna

S. Wing & Co., Charlestown, Mass.

New 5×7 multiplying camera with vertical and horizontal movements.

Thos. H. McCollin, Philadelphia, Pa.

Ferro-prussiate paper and examples of work on it, etc.

Malingkrodt Chemical Works, St. Louis, Mo.

Samples of various photographic chemicals manufactured by them.

J. C. Somerville, St. Louis, Mo.

General stock, apparatus, etc.

De Voe & Co.

Combination chair. Standing rest. Background brackets, etc.

E. & H. T. Anthony & Co , New York,
show a good assortment of their well-known apparatus, including the favorite "Novel" cameras, Dallmeyer, Platyscope and E. A. lenses, etc.

Among the camera boxes we noticed a modification of the "Novel"—only just out, in fact the samples had evidently been finished in a hurry—to which the name "Fairy" has been given. It is lighter and more compact than the regular "Novel," while it is profusely ornamented with nickel work. It is also higher in price, being designed as a "fancy" box.

We recognized also our old acquaintance, the "Detective" camera, the Anthony enlarging camera, etc.

We were very favorably impressed with a new negative washing box, lately introduced by this house; it admits the water in the form of a shower at the top, and discharges it by means of a siphon at the side, so that it is constantly filling and emptying itself.

A large glass case in the centre of this exhibit contained samples of the celebrated "E. A." chemicals, while some frames in the rear displayed life-size enlargements from cabinet heads made on gelatino-bromide paper by means of the Anthony enlarging camera.

Some of these were plain prints, others worked up with the air-brush. The plain work was very good.

Near these enlargements were some 8×10 interiors made with a Dallmeyer rapid rectilinear lens, by Mr. Hill, Elizabeth, N. J. Very fine work.

We also saw here a new style of flat printing frame, with guards over the springs, to take the strain off the centre screws.

Mr. Hoover, of the Inglis Dry-Plate Company, had a new shutter of his invention, adapted for "time" exposures with a pneumatic attachment, or with a trigger for instantaneous exposures. It consists essentially of two slides with diamond-shaped openings, working against one another, and through the lens mount in place of the stops, which it supersedes. It is adjustable for almost any rapidity of exposure and any size of opening, and from what we saw of it we are inclined to think it "takes the cake."

There were a number of other exhibits, but we were unable to get around to them all. Amongst them were several retouching machines.

The journals, of course, were all represented, the *St. Louis Photographer* by its fair proprietress and two barrels of lemonade, which was freely dispensed for the benefit of the thirsty.

REPORT OF THE PROCEEDINGS OF THE FIFTH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

CINCINNATI, July 29, 1884.

The convention was called to order at 10:30 A. M., by President Kent.

In the absence of the governor of the State of Ohio, and the mayor of Cincinnati, Secretary Leo Weingartner delivered the address of welcome as follows:

Mr. President and Gentlemen of the Photographers' Association of America:

It was expected that the governor of the State of Ohio would be present to-day to welcome you to our city and to our State, but he has been detained at Columbus by executive duties, and the mayor being out of the city this pleasant duty has devolved upon me. (Applause.)

I bid you welcome to the city, and its hospitalities; I trust your stay with us will be both pleasant and profitable, and that you will return to your homes satisfied that the officers of the association have done all in their power to make the *Fifth* Annual Convention a success in every respect.

The President:—I regret that we have neither the governor nor the mayor here to deliver the opening address as was expected. *It is* to be regretted that neither of these distinguished gentlemen could have met with us and given us an address of welcome, but I congratulate you upon having escaped a long address from your president or secretary in consequence.

Without any other formality I will now announce the convention open for business. I see that Mr. E. L. Wilson is in the hall; will he please come forward to the stage?

The President:—Gentlemen of the Association —(I should say Ladies and Gentlemen, as I see there are some ladies in the audience):—In opening this convention I have to make an acknowledgement of a weakness I possess. I never possessed but one, but the one I speak of has troubled me all my life, and I regret to say that it does not decrease with my increasing years; I refer to my inability to remember names and faces. I *am* able to remember the names of my most intimate friends; for instance, I can remember our friend and co-worker here, Mr. Ryder (I think that is his name), and whom I shall never forget; also I can remember our friend Weingartner, and our distinguished friend here, Mr. Wilson, whom nobody will forget if *he* can help it. And here, too, is our distinguished and vigilant ex-president, who has so peculiar a name, I am unable to recall it at this time. I remember to have read it in the Bible when I was younger. I believe it comes somewhere before Judges—a position I trust he will never be compelled to occupy. I mention this peculiarity of mine as an excuse for asking each one of you when you rise to address the convention, or to make an elaborate speech, to announce distinctly your name and address, rather than to place dependence on my memory, and if I should chance to call Brown Smith, or Smith Brown, I trust you will take no exception to it and remember that your identity is not impaired by the mistake. Without further remarks we will now proceed to business.

I think the first matter is the calling of the roll, but if I remember right this has been dispensed with at all former meetings, and it seems to be entirely unnecessary. A motion will be entertained to dispense with the calling of the roll.

The motion to dispense with the calling of the roll was carried unanimously.

The next business in order is the reading of the minutes of the last meeting. If the secretary has prepared the minutes they will be read.

A motion to dispense with reading of the minutes was carried.

The next business in order is the reports of the standing and special committees, which will be read by their titles. In the order of business in the by-laws "these reports may be read in full or by their titles, and laid on the table for future consideration." I understand there is a report made by Mr. Gentilé, which he is to read, also a report made by J. Traill Taylor, which I believe has not yet been received.

REPORT ON THE PROGRESS OF PHOTOGRAPHY.

The President:—Mr. J. Traill Taylor sent me his resignation as a member of this committee. I replied that we regretted exceedingly his retirement, and asked him to make an individual report. I was not aware he had complied with this request until I received a letter from him yesterday saying he had sent a report which, as I said before, will be received to-morrow. This is explanatory of the remark of Mr. Gentilé as to Mr. Taylor's report. If there is no objection Mr. Gentilé will now read his report. (See p. 183.)

You have heard the gentleman's able and interesting report on the "Progress of Photography," what will we do with it?

A member:—I move that it be placed on file.

The motion was seconded and carried unanimously.

Mr. Owen Howe, of Troy, O.:—I would recommend that the vote of this body be extended to Mr. Gentilé, and that a copy of the same be sent to the photographic journals for publication.

The motion was seconded and carried unanimously.

The executive committee's report was now read and a motion that it be placed on file was adopted unanimously.

Mr. Joshua Smith, chairman of the committee on the Fitzgibbon testimonial, reported $585 subscribed and $560 paid up. This amount had been handed over to Mrs. Fitzgibbon.

Signed,
JOSHUA SMITH, } Committee.
J. C. SOMERVILLE, }

On motion, report accepted and committee discharged.

The President:—The next business is the appointment of a committee for the nomination of officers, and I name on that committee, Mr. Carbutt, of Philadelphia; Mr. Hesler, of Chicago; Mr. Carlisle, of Providence; Mr. Motes, of Georgia; and McMichael, of Buffalo. This committee is to report to-morrow at the morning session. The next in order is miscellaneous business. If any one has anything to say, let it be presented now.

Mr. Weingartner:—Mr. President:—I have a report here to the effect that the rules regarding eligibility of members and the payment of dues be arranged differently, and I move an amendment to the constitution which reads, "Strike out Section 2, Article 2, and insert instead that 'any person, not an employe, desiring to become a member of this association will be admitted by paying into the treasury $3.00 for the initiation fee of the association, and the further sum of $2.00 which shall be paid annually before the adjournment of each annual session. Employes desiring to become members shall pay for initiation $2.00, and for dues $1.00 per year, as above.'

"Strike out the first five lines of Section 3, Article 2, and all of Section 4, and insert as follows: 'Any member failing to pay his dues on or before the day of adjournment of each annual session, shall have his name striken from the roll of this association, and can only become a member again by paying the initiation fees, as if he had never before been a member.'" Now, gentlemen, I think this amendment to the constitution had better be adopted, and it will be brought up to-morrow morning for further consideration.

The President:—The constitution prescribes that it may be altered or amended by a three-fourths vote of those present, notice of which is to be given one sitting before it is voted upon. Any other miscellaneous business, gentlemen? It seems to be rather quiet other than the sound of the hammer outside, which indicates that something is going on. In prayer meetings when there is a lull, which sometimes occurs, some brother is called upon to tell his experience or make a confession. I suppose no one here has a confession to make, so will some brother tell his experience.

Dr. Garrison, Chicago:—Inasmuch as numerous delegates and visitors here would like to see the exhibition, I think it would be well for us to adjourn until this afternoon. I therefore move that we adjourn.

The President:—Before that motion is put it would be necessary that the regular order of business should be changed. If it is so desired we will do it at this time. The order of business is prescribed in the by-laws. If that order is changed it will be necessary for us to make a motion to that effect.

Dr. Garrison:—In making the motion I understood you had passed through the regular order of business and were trying to kill time.

The President:—We have not passed through the regular order of business. We have arrived at the point where we attend to miscellaneous business. There is also the president's address and report.

Dr. Garrison:—I don't care to interfere with the regular proceedings of the convention.

The President:—I think there is very little miscellaneous business to come before the meeting this morning. If so, it will be attended to later, and there will be no afternoon session. It has been so decided by the committee. We will attend to what business we can this morning, and we will be let off this afternoon in order that we may look around and get acquainted. Preparations are being made for some one to demonstrate on this platform here behind me. I judge by the sound it is not completed yet, though it may be by this afternoon. If it is, there will be some demonstrations on it this afternoon by volunteers. I am proceeding with business now, because I do not understand that the motion to adjourn was seconded. The motion to adjourn is always in order.

Dr. Garrison:—Has the committee decided that there will be a further session this afternoon? If so I should like to know that we make arrangements accordingly.

The President:—The next meeting will be to-morrow morning at 10 o'clock.

Secretary Weingartner here announced the details and arrangements for a concert and display of fire-works at the Highland House this evening, and an excursion to the zoological gardens to-morrow afternoon.

The President: Is there any other business?

Mr. Poole, of St.Catharine's: In view of what has been stated by our secretary, would it not be advisable to proceed with the business as far as possible, or eventually there will be a great waste of time. I therefore suggest we have the president's address if he is willing to give it at this time.

The President: I am ready.

A voice: "Well, go ahead."

The president then delivered his address as follows:

PRESIDENT'S ADDRESS.

Ladies and Gentlemen of the Photographic Association of America:

It would be an assumption on the part of the presiding officer, and an act wholly unwarranted by the necessity of the case, to enter into any detailed statement of the condition of this association, or to devise or advise any particular course of action on the part of the members.

The various interests or requirements are matters as well understood by most of you as by myself, and so I have omitted doing any more than comply with section 8, of the by-laws, which prescribes that the first session shall close with the president's annual address.

The meeting last year at Milwaukee was the first one of the Association I had the pleasure of attending. That meeting, under the direction of my able and distinguished predecessor, Mr. Beebe, was regarded as the most successful and interesting in every particular of any previously held by the society, and naturally I have looked upon the management of it as somewhat of a pattern to be followed in our present business session.

Those of you who were so fortunate as to be present at Milwaukee will remember how expeditiously the business affairs of the association were conducted, and how little of dissension and dissatisfaction was apparent in those taking part in the discussions and proceedings of that meeting. I may be permitted to hope that our present deliberations may be characterized by the same harmony and absence of strife and animosity that prevailed at that time.

You also remember how little of your valuable time was consumed by your president at that meeting of '83. Even his annual address detained you but little more than five minutes, and yet covered all necessary ground, except possibly a display of his ability to prepare an elaborate address, which all would concede him capable of doing.

It will be my endeavor at this time, with your co-operation and assistance, to have brevity and dispatch as prominent features in our proceedings, as was then apparent.

The constitution enjoins upon the presiding officer the duty of making an annual report of the progress of the society during the year past. In compliance with that requirement, I submit for your inspection and consideration the elaborate address (more eloquent than any I can utter) displayed upon the screens in the adjoining rooms and corridors, and in the manufacturers' and dealers' department upon the other floor of this building.

While that display may not, in quantity, greatly excel all other exhibits of this association, you will all admit that in quality it has not been equalled by anything heretofore shown, and I am safe in saying we may indulge in justifiable pride in regarding this as the finest example of the possibilities of our beautiful art ever made at any time or in any place; and I feel like congratulating you on the evidence there presented, not that we have achieved the end desired or arrived at the point where the photographic stage puts up; but that we have gotten a start that in the end may accomplish results that shall entitle the photographers of America to be ranked as artists pre-eminent above all others.

The time has been when the profession of photographer was not held in as high esteem as that of statesman or expounder of the law—in fact, to be a photographer then was not regarded as any great credit to a man, and the occupation entitled him to the distinction of being set aside as being of small consequence.

But, gentlemen, we are able to discern in the present status of the art, a condition of things quite different from what obtained at that time. Photography and photographers are to-day accorded the high rank to which it and they have been elevated by the energy and intelligence of such men as I see before me on this occasion, and whose works are now displayed in the adjoining corridors.

It is well for the profession that men experienced in the occult qualities of photography and artistic conditions, men of energy who are abreast of the times in every way, are to-day engaged heart and soul in lifting Photographic science and Photographic art to the importance to which they are entitled. For this condition of things, so apparent all about us, the P. A. of A. is entitled to a large degree of credit. While we, as a national association, would not undervalue what has been done by state and local societies, we may feel a just pride in contemplating the amount of good the national organization has been instrumental in accomplishing.

Let us hope that this association in the future will be able to advance the interest and welfare of all connected with it to such an extent that every reputable photographer in this broad land will be proud to be enrolled as a member.

There is one matter of vital importance to every photographer which I regret the necessity of alluding to at this time, a matter that concerns the welfare of all more intimately than anything else connected with photography—I refer to the subject of prices. It is lamentable that there are those in our profession who, by necessity or greed, feel compelled to put a price on their own productions that will barely pay for material and labor employed. Unfortunately, too, the evil is not confined to those commonly denominated "Cheap Johns." If such were the case, and cheap prices always meant cheap pictures, photographers of ability could well afford to pay no attention to this troublesome matter. In some localities this is doubtless the case, but many of us have reason to know and regret that work of an excellent, if not superior quality, is made at prices which these men are pleased to say "defies competition." This fact, that good work made by men of considerable ability is sold at such ruinous prices is the source and sum of all the price troubles.

Cheap pictures as such are not by any means an unmitigated evil, if indeed they are not an actual benefit to the better class of photographers, and, really, too, such productions are a necessity with the masses who would be deprived of these luxuries if compelled to pay extravagant prices. The necessity is that there should be a correspondence between price and quality, and the effort of this or any other society, should be to promote that equality rather than to stimulate strife and bitterness among those engaged in the business.

We cannot, if we would, ignore the fact that photographers, and even those who do not think exactly as we do, have rights that we are bound to recognize and respect.

It should be remembered too that since they are possessed of such rights, we are, and will continue to be, powerless to coerce them into our way of thinking and acting.

It is indeed a matter for serious consideration, and I fear no satisfactory solution of the difficulty will be reached in the near future—certainly I have no scheme or suggestion to offer other than what I have already intimated, that a concilatory course should be pursued, rather than such measures as I have latterly seen advocated by some of our photographic publications. We may organize into societies, and committees, and legislate low prices out of existence—on paper—but the evil will still be as prevalent as ever, while the perpetrators of such will smile at our futile efforts to regulate their business and establish their prices.

What action, if any, this society should take is for others—who may possibly have clearer ideas than your president—to suggest or advocate.

It is apparent to my mind that while there is no subject of equal importance there is none more difficult to compass. At any rate no one likes to be driven. Men are more easily won by argument and appeal to their convictions of right and justice, or at least to what would appear to be their own interest, than they are to be forced into compliance with the views of others.

It is hardly necessary that anything should be said at this time relative to the subject of gelatine plates; not that the subject has lost any of its importance or interest to practical photographers, or that it is so familiar to all workers that nothing new can be said or suggested. On the contrary, it appears to me that there is no subject attracting more attention at the present time than that of dry plates

While we have learned much of the advantages of this process, we are still far from having discovered all its possibilities. There are those who are still reluctant to concede its superiority over the wet process, many still contending that the crispness and vigor of the old method is not attainable with the new. It is noticeable, however, that most of those entertaining this view are the ones least familiar with the process. And it is doubtful if any who have adopted the dry plate and become familiar with it have given up its use and returned to the old bath and collodion.

Its advantages are so many that its abandonment would be such a long step backward that no progressive photographer would think of taking it. In spite of all opposition it is evident the gelatine process has come to stay, at least until something possessing superior advantages takes its place.

But, having promised that our proceedings should be characterized by brevity and dispatch, I shall not now proceed to violate that agreement by keeping you longer than to express the hope that every member of this body will be actuated by a desire to do all in his power to promote the welfare of the national association, realizing that in doing so he is working for his own interests and the interests of his fellow workers.

The President: To-morrow we shall have an address from our friend Mr. Ryder, on the business management of photography. It will be the most interesting document presented at this convention. I promise you that in advance.

Mr. Poole, of St. Catharine's, Ont.: I assume to say, sir, that the photographers of Canada are seeking to form an association similar to this, though of course very small as compared with this. Our first meeting will be in the second week of September. We expect then to have a very creditable exhibition of photographs in the city of Toronto, and I am empowered by the officers of that association to invite each and every member of this association to visit us there and take part in our meetings. We shall be very happy to see all that can come there in the second week of September.

A member: We will all be there.

On motion, adjourned.

No afternoon session was held on Tuesday, that portion of the day being devoted to seeing the exhibits and getting acquainted. In the evening there was a very fine display of fireworks and a concert at the Highland House; the fireworks being specially got up in honor of the visitors, a large number of whom attended.

ON THE BUSINESS MANAGEMENT OF PHOTOGRAPHY.

BY J. F. RIDER.

Mr. President, Ladies and Gentlemen: As a rule, men think well of themselves and don't care to be told what they already know. There is probably not a man here who doubts his ability to run the photograph business. You will please understand, therefore, that I feel embarrassment in so delicate a matter as undertaking to tell you, "You don't understand your business, and if you will only listen I will tell you all about it." I do not take such a liberty, but if you will tolerate me a few minutes I will give you my convictions upon the subject.

The first necessary requirement—the foundation stone—is a thorough knowledge of every department of the work. An intelligent understanding of one's business is solid capital. The more of that element a man carries the greater is his strength. As we have no established system of apprenticeship, no regular course of study or practice of our young art, the learner is dependent upon a haphazard chance; his aptness at catching an idea, with a natural handiness in taking to new work, and a taste for art, will,even in a small way,prove his good friends in grasping photography.

Considering the many intricate points in chemical requirements, the judgment necessary to be exercised at every stage of the work, the many handlings and processes which depend one upon another, and all necessary to the proper production of a finished photograph, it is really a matter of surprise how successfully it is accomplished with the small chances the workman has had for acquiring knowledge. I say this believing the instances where photographers are really educated in the art-science of the profession they claim to be masters of, are very few. I hope the time is near when regular schools of photography will be established and sustained in this country, where the learner may have the benefit of good teaching under competent professors, where study shall be necessary, that he should be compelled to pass a rigid examination in chemistry, optics, physics, lighting, composition and drawing, before he should be entitled to a diploma, which should be his voucher for competency.

Then we could expect intelligent skill in our employes, and the public could feel assured they were being served in a proper manner.

Truly knowledge is power. It is recognized and respected by the learned and ignorant alike.

The colored servant of a surgeon, explaining why his master charged twenty-five dollars for the performance of an operation in surgery which took about ten minutes to do, said he charged five dollars for the work and twenty dollars for the know how.

In all departments of the arts, the sciences or in mechanics, a man of recognized high attainments commands the confidence of his patrons and the right to be well paid for his services.

To fit ourselves in the best way for the pursuit of our art, which is becoming yearly more an art, and more closely allied to science, buy books, subscribe for journals, magazines and papers upon the subject; make your collection of photographic literature a special library, then make its acquaintance, the more intimate the better. In this way you become master of the requirements of your business, which is a rock-bottom foundation upon which you may build with all confidence and security.

Educate your help; teach them in the little points and in the greater ones; train them to your ways; give them your ideas and listen fairly to theirs,—you may sometimes get the best end of the bargain in such exchange.

Make a collection of studies and encourage yourself and your operator to frequent examination of them.

I have large specimen books, the leaves of which are of tar-board, 22×28 inches. To these tar-boards on both sides I glue mounted photographs, the best examples of work I can find. I purchase and I exchange; I have the work of friends and of strangers. It is a valuable collection for reference. They are kept where my operator has constant access to them; from them he can find almost every style of lighting and posing as well as the peculiarities of many noted operators.

A man who takes interest and pride in his work likes to know how he stands as compared with others; it is a spur to him, and keeps him on the alert.

Next in value to superior quality in your productions is a safe and careful system in all the various departments, from writing an order for a sitting to delivering the finished picture into the hands of your customer. Such system should be observed. The soul of that system should be order and cleanliness.

There may be to some, an affectionate interest in collections of antiquated relics of good old days, whose dust-coated and deep-stained fronts attest to long years of service, and certify to the claim of "old stager." Many a well-meant operating room harbors in its corners and along its side-walls collections of crippled head-rests, rickety camera stands, faded chairs with long fringed upholstery, broken balustrades, old camera boxes, &c., which are in no sense ornamental or advantageous.

It is a mistake to make a museum or a junk-shop of the operating room. Remove the old trash; give the scrub-brush, the paint-pot and the whitewash brush a chance. If there be a worse smell than the atmosphere of a justice's office, it is the musty odor sometimes encountered in a slovenly kept photograph gallery.

The man who satisfies his conscience that he cannot afford to expend money in thoroughly renovating as often as once a year, and refurnishing when needful, is a poor manager, and works against his own interest. Nothing commands more prompt respect than tidiness. A seeming prosperity soon brings the reality; people like to patronize a prosperous man, and naturally avoid a poor or an unfortunate one; all which shows that an air of thrift and systematic order should be practised and enforced.

Keep your show of specimen pictures fresh by frequent changes. Your customers will visit you oftener if you have new attractions. They will take pride in you and make your establishment one of the places to be visited by strangers and their visiting friends, among whom you will find good customers.

How to treat with customers. Here comes the place for exercise of judgment—for real generalship. To be polite, attentive, genial and at the same time firm in adhering to safe rules for your own protection is a difficult thing to do, yet it can be done. A correct start often saves misunderstandings, which are to be avoided by all means. It is a great mistake to have serious differences with your patrons; you must remember that great consideration is due your sitter. Perhaps you sometimes sit yourself and find you are whimsical and exacting; you like to try again, for some reason you can't quite explain. Perhaps when you go to your tailor you are not at once suited with the fit or hang of your coat; his telling you it is all right does not quite convince. Remember these things and be patient; you can make another sitting as quickly as you can make an argument. The sitting would perhaps convince; your argument would not. Make your prices sufficiently high to justify the use of a number of plates, and a half hour's time if necessary. You can afford this occasionally. If the exactions of your sitter be too great you are entitled to charge for extra service; state it pleasantly but firmly; sugar-coat your words where the subject is disagreeable.

In bargaining or arranging the details for a sitting, have everything clear and distinctly understood. If additional styles beyond what is described in your order are asked for, then is the time to mention the additional price, and to stand by it.

It is the good-natured fellows who can't say no, who, in their anxiety to please the dear ladies, get most imposed upon.

It is not an uncommon thing for a lady to have a dozen dresses and as many toilettes photographed before an order is given to finish. She gratifies her curiosity as to how they will take; and the more sittings she has the more undecided she is which to order. Is the lady to blame? By no means; the man has helped her to impose upon him and is helping her to establish the custom of having his neighbors imposed upon also.

I believe it entirely fair to make for all sitters two good negatives, differing in position, that they may have a choice. If they desire more plates used it is very proper they be required to pay extra for them; particularly should sitters be made to understand a change of dress or toilette means an extra charge for new sittings.

Don't be too obsequious to your aristocratic customers and domineering with those of modest means, who are generally sensitive. Be polite to all. Remember where you get one dollar from the capitalist you get ten from the middle class—the working people. Be prompt as possible in finishing and delivering your work; make no promises on that point except you are sure of keeping them. Impress your customers with the fact that your word is to be relied upon.

Never put off the securing of an order for another time; clinch it on the spot. It is never too late in the day to make a sitting,—that is, to take an order for a sitting. Many a time have I written orders for sittings by gaslight and given my client into the hands of the operator. With his money in the till he is sure to come for his proof in the morning, and well satisfied to try again on learning last night's effort was not entirely a success. Had I told him it was too late in the day and advised his coming again, I should probably not have seen him more. With a desire for sitting while his mind was upon it, he would most likely try my next door neighbor, who, with more enterprise than I had shown, would probably gobble him.

The time to take money is before the sitter goes into the operating room; particularly should this apply to strangers and parties regarded as doubtful. All photographers who fail in this important rule are practicing an injustice upon themselves. Prices for photographs have become greatly demoralized. Many of our prominent and good men have been led or driven, I might say "clubbed," into this great wrong. I will venture to assert that four in every five who have fallen into low prices are ashamed of it, and would be glad to get back to more respectable figures and a more respectable standing among their fellows. Low prices are in every way degrading; the work is carelessly made, the standard of excellence is lowered—in fact, is lost; ambition sinks to indifference, enthusiasm is killed. The work becomes drudgery, devoid of interest or pleasure.

It is an injury and an insult upon our young art. It is a shame to the men who have helped bring it about.

Is there a remedy? Let us see. In all places where photography is practiced are men and women who want the best that can be made and will pay good prices for what they believe to be superior work. It is possible for photographers to invest their business with a tone and dignity that will be recognized by the people. There are many prominent instances to prove my assertion. This good city of Cincinnati stands at the front as an example to all other cities and to all other photographers of this country. The gentlemen who practice photography here are not devising schemes for decorating the fences with the skins of their neighbors; they are so wise as to be on the best of terms with each other, both in a business and a social sense; they are quite willing each other should live and thrive. They are prosperous; they are honored.

What is possible to Cincinnati is possible to all other cities. I think it is a fitting time and place to bring this fact to your attention.

The curse of our business is this curse of low prices. There is no good reason for it. There is no wisdom or advantage in it. It is a wrong to yourself, your neighbor and to the art you should be proud of, and which you should feel bound to protect.

Year by year this blotch is growing blacker and deeper. In many instances photographs are sold at prices which show that it is not possible for the proprietor to pay his help or his stock bills and make a profit on his work. This means folly, ruin and death to photography as a means of securing a livelihood.

Reform must come. I heard when a child that the city of Rotterdam, in Holland, was the cleanest city in the world, and the way it came about was from every one scrubbing their own doorstep. I have always remembered it. My friends, the way to bring about reform in the abuse we are talking of is, not to wait for your neighbor, but to commence scrubbing your own door stone.

If you are a skilled and competent photographer straighten up and assert yourself! Put your establishment in proper train for an advance to a higher grade of work and a higher scale of prices. The public, recognizing your progress, will follow you; if your neighbor will follow also, so much the better for you both. If he will not, you have, by your act, proved yourself his superior, and will hold the advanced ground you have taken. Elevate your art and it will elevate you. Make your prices high and make your work worth all you charge for it.

This, gentlemen, is the road to success. Look about you and prove its truthfulness. The men who have been fortunate in our business have been faithful to the course I have here laid down.

J. TRAILL TAYLOR'S REPORT ON PHOTOGRAPHIC PROGRESS.

Photography advances with such imperceptible strides as to render it somewhat difficult to indicate definitely the progress it has made within a circumscribed period, more especially when such period embraces the comparatively brief span of one year. While the past twelve months have not been so fruitful in invention or discovery as to cause that period to stand out in contrast with others, neither have they, on the other hand, been characterized by stagnation. During the past year innumerable printing processes of a mechanical description, or involving the use of printers' ink, have been invented, patented, or published. Of these, some have reference to the production of intaglio surfaces for employment as in copperplate printing; others—and these the most numerous—come under the category of relief or surface blocks for printing, in conjunction with type.

There is another process to which none of those distinctions apply, inasmuch as it is neither an intaglio nor relief process. It has not been patented or published, but is worked as a secret process. And yet it is in place to refer to it here, because during the past year it has been selected as *the* process apparently best adapted for preparing the illustrations of the leading European photographic journals. From the brief description which I shall give, its character and, possibly, its *modus operandi* will be perceived. To commence at the end; the printing is executed at the lithographic press from a transfer laid down upon a lithographic stone, which is smooth or polished —not grained. And yet the print possesses a fine stippled grain similar to a chalk drawing or a print from a grained stone. From this any one conversant with the process of lithographic printing will necessarily infer that the granularity has been imparted at a stage prior to that of placing the transfer upon the stone. A film of bichromatized gelatine supported upon paper, glass, metal, or any other substance more convenient is exposed to light under a negative. It is now submitted to the action of chemicals, by which granularity is imparted to the surface, although the gelatine film may be so prepared as to possess within itself the requisites for imparting the stipple. In an outline sketch like the present, however, it is unnecessary to describe the means employed for producing this indispensable effect —the more particularly as they are, doubtless, known to most of those for whom this subject possesses interest. The requisite granularity of surface having been obtained, it is rolled up with transfer ink, and an impression being taken on transfer paper is conveyed to the stone, from which impressions are obtained in the usual mode. From such experiments as I have made I am enabled to say that the fineness or coarseness of the grain is under complete control, and ranges between the most delicate touch of a black-lead pencil to the coarse, granular texture characteristic of the large portraits of actors and others utilized as public show-bills.

Desirous of ascertaining the possibility of applying this process to the production of surface blocks, I laid a transfer upon a polished zinc plate, etched it in such a manner as not to undercut the delicate stippled grain, and in this way produced a block which was capable of being printed when surrounded by type. This, however, is a deviation from what I commenced with, which is that the process as printed from lithographic stones, is an accomplished fact, whatever may be the nature of its details, and is one which, from now being extensively made use of by European, and especially by English, journals is worthy of notice.

No topic has of late engrossed more attention than that of the illumination of the operating room. The yellow light by which wet collodion operations could be safely conducted, was found totally inadequate for gelatine plate manipulations, and was superseded by light of an intense, deep, ruby color. In a physiological point of view this was found to be productive of effects positively deleterious to the eyesight in some cases, and inconvenient in others. Hence a reaction set in and the question was propounded— "Which is the light that produces the least amount of action on the sensitive plate combined with comfort to those in the dark room?" Mr. W. E. Debenham, a professional portrait photographer, of London, constituted himself the champion of reform. He found that perfect safety to the plates, together with comfort to the eyes and a resulting light of a character which, by contrast with others, may be termed a "very subdued white light," was obtained by interposing between the lamp and the manipulating bench a compound layer composed of green glass and yellow paper. Two thicknesses of paper of a deep canary color, along with a plate of green glass, or of gelatine or paper stained of a peculiar green color, have in my own case been made to supersede a deep ruby glass with much comfort and satisfaction. The particular tints are of importance.

But the special advantages of green light as a useful source of illumination in the dark room are not now pointed out for the first time. In January, 1870, an American gentleman, whose name is as much honored in Europe as in the United States (for science is of no nationality), strongly recommended the substitution of green glass, pure and simple, for the orange glass hitherto employed in dark-room illumination; and this recommendation of Mr. Matthew Carey Lea was enforced by arguments deduced from his own experience of its use. The light he employed was gas, and the green glass was neither the darkest nor the lightest kind, but that of an intermediate shade, care being taken that it was not of a bluish-green. Such a light, while possessing all that comfort and safety for the eyes claimed on its behalf at the time by Mr. Lea, was safe for collodion plates only, and this when the light was not too powerful. The addition of the yellow paper referred to appears to fulfill all the requirements of the present time. Even when it may prove inconvenient at once to remove the red glass from a window or lantern, a marked improvement in the quality of the light will be immediately perceived by the addition of one thickness of yellow paper.

The subject of increasing and reducing the intensity of gelatine negatives is one that has received and is still receiving much attention. As regards intensification, chloride of mercury followed by other agents still enjoys popular favor, notwithstanding many recorded cases of deterioration. The first action of chloride of mercury upon a negative, as we all know, is to turn it black. If the action be arrested at this stage by copious washing the image appears to be permanent. Certainly I have found no change in some that were treated in this manner about nine years ago, while in connection with other negatives treated with this salt, combined with iodides and other preparations, I have not experienced the same immunity from change.

A method of adding iodide of mercury to the developer, as suggested by Mr. Henry J. Newton, by which an increase of intensity is obtained by the developing operation, is a fitting subject for—and will doubtless receive—consideration by the members at this convention. A solution which is at once a decolorizer and, with the addition of a few drops of silver, an intensifier, was introduced by Mr. B. J. Edwards just in time to permit of its being alluded to in my *Report on Photographic Progress* last year. It consists in adding to the usual clearing solution of citric acid and alum a quantity of protosulphate of iron in the proportion of about one-third more than the combined weight of the other two ingredients. When employed without any nitrate of silver it discolorizes a yellow negative; with silver it intensifies the image. Since the last convention it has been much tried, and enjoys popular favor. Pyrogallic acid, as a reducer of the nitrate, is also now being employed. These, it will be observed, are analogues of the methods long since suggested for collodion intensification. I fail to discover among my negatives any which have faded after having been treated first with chloride of mercury and then with diluted ammonia, or old cyanide fixing solution nearly saturated with silver. Exceptional care was taken in the washing of these.

Reducing intensity may be effected by a variety of processes. Those only which are of recent introduction will be here noticed. Mr. A. L. Henderson has found that the fumes of cyanide of potassium, acting upon a gelatine negative to which air has free access, will effect a gradual reduction of its density. This reducing action is not a rapid one. It may be safely predicted that a method of reducing intensity proposed by Mr. E. Howard Farmer will prove to be *the* process of the future. If a solution of ferridcyanide of potassium (red prussiate) be applied to a gelatine negative the silver forming the image becomes immediately converted into ferrocyanide of silver, to remove which all that is necessary is to apply hyposulphite of soda. Mr. Farmer mixes these together in the following proportions:—An ounce of the ferridcyanide is dissolved in a pint of water, and when about to use it a few drops are added to the solution of hyposulphite of soda of the same strength as the other. When the negative is immersed in this a gradual reduction of intensity takes place; for as the silver forming the image becomes converted into the ferrocyanide of silver it is immediately dissolved by the hypo. I have tried numerous experiments with this system of reducing negatives, both wholly and locally, and beg strongly to bear testimony to its merits. Its description will suggest the somewhat analogous solution of iodine in cyanide of potassium; but the latter is unmanageable and dangerous by comparison.

Much ingenuity has been displayed in the devising of instantaneous shutters, into which have been imported numerous mechanical appliances. Portrait photographers require, however, not so much a shutter giving instantaniety of action as a prolongation of the exposure at will. Without intending any slight to the many ingenious inventions designed to effect this end, I may adduce as an example of one of the latest that recently introduced by Mr. Cadett—the gentleman who, it will be remembered, was the first to apply the pneumatic principle to exposures in the camera. This most ingenious effort of Mr. Cadett's may be described as a square cap, which is fixed upon either the inner or outer end of the lens. A very fine piece of rubber tubing is attached to the side, the other end of which terminates in the well-known pneumatic ball. Upon pressing this a tiny rubber bellows concealed in the body of the cap actuates a lever, by which a sliding shutter working between guides immediately darts upwards, leaving the lens uncovered for either a fraction of a second or a period that may be prolonged into minutes according to the nature and duration of the pressure upon the rubber ball.

Shutters suggest lenses. Since the convention of last year no new form of lens has been introduced; but immediately before that meeting an amateur optician, Mr. Thomas Furnell, devised a form of combination, which from its character appears to hold out a promise of good so soon as it is introduced by the manufacturing opticians. Although it cannot be said to possess either novelty in principle, or, indeed, anything startling—inasmuch as it is only a slight departure from what has been previously effected—yet curves other than those hitherto adopted have been imported into it, and, while there is no difficulty in its construction, it defines sharply over a moderately large field. It is a triple lens—a class, by the way, which has been out of favor for several years. Its front lens is achromatized. The centre element is a single lens of flint glass, double concave, and its back a plano-convex of crown glass.

Nothing has of late transpired in connection with negative gelatine emulsion, calling for special mention, unless it be the fact that the value of an addition of iodide to the bromide is more and more fully recognized. The preparation of paper, opal plates, and plain glass plates with gelatino-chloride emulsion is now an established branch of commerce—at least in certain parts of the world. For producing enlargements by the lantern the application of emulsion to paper offers exceptional advantages, for the operations may be conducted quite independently of daylight. Opal pictures, either enlarged or printed in the frame, possess a peculiar charm; while, for lantern transparencies, a point of value is found in chloride emulsion, as with any given class or brand of plate any desired tone—from the warmest red to the coldest black, including sepia, brown and purple—can be obtained at will by the action of the developer alone.

It is several years since eosine was suggested as a substance which, when added to collodion, tended to give a more truthful representation in light and shade of the colors of nature. It is pleasing to be able to report that Professor Vogel has of late made some further advances in this department of photography.

Among the deaths of those more or less known in the ranks of photographers may be noticed that of Mr. Codman, of Boston, and in the Old World those of Mr. H. B. Pritchard (of the *Photographic News*), and the Rev. F. F. Statham, who was the President of the South London Photographic Society since the period of its organization.

There are many other subjects of a less important description which have transpired in the photographic world; but to even refer to them all would unduly lengthen this communication.

J. TRAILL TAYLOR.

REPORT ON THE PROGRESS OF PHOTOGRAPHY.

BY C. GENTILE.

The president of our association has informed me that Mr. J. Traill Taylor had resigned his position on the committee appointed at the Milwaukee convention to report on the Progress of Photography, and that he would expect me to make a report or get the committee to do so.

As the committee has had no opportunity to confer together or make a joint report I will endeavor to the best of my ability to make an individual report which I hope will only be supplemental to those by others who are more capable than myself to furnish one.

I much regret that we have not a report from the able pen of Mr. J. Traill Taylor as I know it would have interested us and been appreciated.

As regards the Progress of Photography during the past year, it will appear that there has not been any very marked improvement to record. But let us reflect and see what has been done, for most assuredly there has been a great progress in the spread of the knowledge of our art-science. Never has there been a year so prolific in the creation of photographers in America as during the past year. If we go on increasing as in the past it will not be long before the number of amateurs will out-number the professionals. In my opinion this influx of educated men of an inquiring turn of mind will be anything but hurtful to our profession, it will assuredly tend to elevate it in the estimation of the public; a thing we stand in need of.

One rapid stride that Photography has recently taken is the use that is made of it in courts of law as a means of aiding juries to form just and exact opinions on matters that otherwise would be in doubt.

In cases of forgery, duplications of precious documents, comparisons of specimens of textile fabrics, blood, and crystals, it is constantly used with ever increasing advantage, and the veracity of the testimony of the expert is put beyond the question of a doubt. The detective camera has also been brought into practical use, and adds its assistance to the detection of the criminal. In jails and penitentiaries likewise, the camera and photographer has penetrated and an instantaneous likeness of each new inmate puts the prison authorities in possession of a description of a prisoner far more accurate than any verbal explanation. Many experts have been brought from the ranks of the amateur photographer, because the professional photographer has not the time or means to make such a study of a specialty as an amateur is capable of doing.

In Europe one of the most marked improvements or discoveries has been made by Dr. Herman Vogel, of Berlin, he having discovered a process by which colors can be photographed in a manner that will render their just values more correctly than has hitherto been the case. The learned Doctor has given his process to the world, which has been appreciated by his countrymen, who have voted a handsome testimonial for his services in this and other improvements in our art. However, from recent European advices, it seems likely that Dr. Vogel's claims to this discovery are to be disputed, as Mons. Attout Tailfer, a Frenchman, claims that he is the inventor and patentee of the isochromatic gelatino bromide of silver plates, and in a long discussion that occurred on the 4th of July before the Photographic Society of France it was proved that Major Waterhouse, of Calcutta had a prior claim, being the first to propose coloring the film to obtain different results.

In many branches of what would be called commercial photography, great progress has been made during the past year.

I have reference to the mechanical means of rapidly multiplying photographs by means of processes known as typographical or lithographic; a process known as the ink process gives very beautiful results, being extensively used in England, and we frequently receive illustrations in their journals that prove the perfection they have arrived at in the mode of producing a plate that can be employed in the steam press, as the Sprague ink photograph which has been used for book illustrations.

We have every reason to believe that the time is not far distant when our daily papers will be illustrated by the aid of photography, for there have been many and great improvements in block work by Ives, Meisenbach and several others well known to us.

The bromo-gelatine dry plate, as we see from the exhibition before us in these halls, has made immense strides in popularity during the past year. It is needless for me to try to say much on this subject when we have such a show before us. Facts are indisputably proving the superiority of the dry plate over collodion and the negative bath, which are being very rapidly put aside by all progressive photographers to-day. An operator now who cannot work dry plates satisfactorily stands a poor show of obtaining a first-class situation.

The dry plate has caused a revolution in our business in many ways; the smallest country photographers can now claim to use exactly the same chemicals as the best operator in our profession; but I would remind them of a recent remark made by Colonel Stuart Wortley at the last meeting of the Photographic Society of Great Britain, when he said he could teach a person how to make a plate, but that to develop a plate, was a *science*, a most true remark as regards the developing. The making of a really first-class plate is no easy matter, as any one thoroughly conversant with their manufacture will admit.

I regret to say that during the past year we have lost several leading lights in photographic literature. I allude chiefly to the recent loss to photographic journalism of Mr. H. Baden Pritchard, who has done much for us, and I am sure his death will be a great loss. There have been several other losses of men prominent in the profession in England and other countries in Europe, but it gives me great pleasure to state that I have not to record the death of many in America.

As regards the progress of our literature, it seems to be rapidly increasing, for instance in Chicago we have a weekly and also a fortnightly published in the interest of our art.

In Europe the governments take an interest in photography that is not done in this country, the King of the Belgians has invited a congress of photographers to assemble at Brussels to take into consideration the advisability of greater accuracy in the use of terms and uniformity with regard to photographic dimensions.

In England the Photographic Society of Great Britain has accomplished something on this subject by establishing standards for screws and flanges.

It seems to me it would not be inappropriate for this association to take steps to be represented at this congress to be held in Belgium. Whether or not the government of the Unitad States has been invited to take any notice of the coming congress I am unable at present to furnish any information. I know that other governments have. We are certainly interested as much as our European brethren in the proper accuracy in the use of all terms connected with our profession.

Dry plate photography, together with the rapid increase in the number of amateur photographers, has caused the manufacturers of all kinds of apparatus to bestir themselves to endeavor to produce the most portable, elegant and useful apparatus. During the past year many improvements have been made which are of value to us all.

Every year the artists (the photographer and painter I mean) are becoming more closely allied; the portrait painter finds it difficult to get along without the assistance of the photographer, and I find that the more a painter knows of photography the more willing he is to leave his sitter in the hands of the photographer to light and pose his subject; he is more willing to look on and content himself with a few suggestions only, knowing that the good photographer understands the effects that can be obtained under his own skylight better than one who knows nothing about it.

I am satisfied that the demand for photography in all its branches is on the increase and will be so.

Lastly, but not least, of the improvements that can be recorded during the past year, is the great progress in illuminating the dark-room of the dry plate worker. I most thoroughly endorse Mr. Debenham's system of orange and green glass as a means of satisfactorily lighting the dark-room.

Meetings of Societies.

PHILADELPHIA AMATEUR PHOTOGRAPHIC CLUB.

The regular monthly meeting was held at the club rooms, 907 Filbert Street, Monday evening, July 21st. Owing to the fact that most of the members were out of town, little was done.

A resolution was passed to the effect that, in pursuance of the previous resolution inviting visiting amateurs to make use of the club's facilities during their stay in the city, the executive committee is instructed to place upon the front door of the building, a sign bearing the names and addresses of those members of the club whose places of business are very near the rooms, and from whom the keys, etc., may be obtained in case no one is found at the rooms. These names and addresses are as follows:

F. A. Cunningham, 817 Arch Street, J. M. Walmsley, 1015 Chestnut Street, and Dr. J. F. Lewenburg, 54 N. 11th Street.

Mr. Edward Cohen exhibited a set of photographs of bric-a-brac which will form a portion of his exhibit at the Boston Exhibition this fall. The articles in themselves were very handsome, while in the grouping and also in the execution of the work, Mr. Cohen displayed not only a great deal of taste, but great ability and experience in photography. The pictures were equal to the work of the majority of professionals.

The committee on constitution and by-laws again reported that they were ready to submit a draft to the meeting, for action, but upon motion of Mr. Haines, the matter was postponed until the regular meeting in September.

Owing to the small number present, Dr. Lewenburg asked to be excused from reading his paper on the "Science of Photography."

The enlarging and reducing camera is now ready for use.

The club was presented with two very handsome photographs by Mr. William Bell.

Owing to inability to attend to the duties of the position, Mr. Arthur P. Lewis has resigned the vice-presidency, and no successor has yet been nominated.

The membership of the club is steadily increasing, and a good deal of work is being done, as evidenced by the crowded condition of the "dark room" during the early part of every afternoon. GEO. W. PEARSON, Sec'y.

CHICAGO PHOTOGRAPHIC ASSOCIATION.

The regular meeting was held at the Association Room, 229 State St., on Wednesday evening, August 6th, 1884, Dr. H. D. Garrison, President, in the chair. The attendance was large.

Called to order at 8 o'clock.

On motion, reading of minutes of last meeting dispensed with.

Mr. A. L. Henderson was proposed for an honorary member, and was elected unanimously.

The chair, in introducing Mr. Henderson to the meeting, observed that he had no doubt the great majority of those present were more or less acquainted with him through his contributions to the English journals. There were few men who had done more to advance dry-plate photography, and the results of his researches and experiments had always been given freely to the world. Some of those present to-night, who had attended the late convention for the Revision of Constitution and By-laws, in Cincinnati, might perhaps be aware that Mr. Henderson had offered to demonstrate his method of emulsion making before that convention, but, through influences not exactly understood by the speaker, he was not allowed to say a word. There was a whisper in circulation to the effect that a prominent officer of the P. A. of A. was too much interested in a certain dry-plate factory to permit any matters relative to dry-plate making to be discussed, but as to that the speaker could not vouch. However, in dismissing the subject, he would remark that the Cincinnati meeting was the first photographic convention he had ever attended where *not one word was spoken about photography*. However, Cincinnati's loss was our gain, and, without taking up any more of their time, he would now introduce Mr. A. L. Henderson, of London, who would make an emulsion before them and answer any questions.

Mr. Henderson:—

Mr. President and Gentlemen: Your chairman is perfectly right in his statements about the Cincinnati convention. I *did* suggest to Mr. Kent that if there was a gap to be filled up I should be most happy to occupy it with a practical illustration of emulsion making; but let that pass. I have had the pleasure from time to time of publishing many little things in the English and continental journals, which have been appreciated, especially in France and Germany. The process which I shall demonstrate before you to-night is what is known as the Cold Emulsification process. It allows you to obtain readily almost any degree of sensitiveness you may desire. It should be remarked here (although I suppose it is pretty generally understood) that the more sensitive your emulsion the less light you can use in preparing and developing your plates. Some time ago, I myself offered a small money prize for a safe light for this purpose; but there were no competitors. They all said: "If you cannot devise such a light yourself, Mr. Henderson, it is useless to expect any one else to do it." I do not think these gentlemen quite did themselves justice in taking this view of the case: but at any rate, I did not get my "safe light."

About the best thing I have met with so far, is a peculiar variety of paper called "canary medium." I have a piece of it here, which may be cut in little bits for distribution. I may say that it is astonishingly safe.

A window, 3 feet square, covered with it, and lighted by a small gas jet behind, gives ample illumination for all purposes at a distance of 4 feet from the window.

It is impossible to tell the color of the paper by gas light; it is a peculiar greenish-yellow, and is, I believe, a chromate of lead color; you use it without oiling or other treatment.

Mr. Burnham: Can this medium be safely used when daylight is the illuminant?

Mr. Henderson: Daylight is such an uncertain quantity that it it is difficult to answer that question directly. However, I should advise you to use the paper double in that case. I may observe that I do not use either day light or gas light myself, but a small kerosene lamp giving a flame much smaller than a candle.

The rapidity of an emulsion depends, amongst other things, on the quantity of gelatine used in the process of emulsification. A very small quantity is sufficient. I will take 5 grains in 4 oz. of water. By using 10 grains a much finer deposit would be obtained, but the emulsion would also be much slower.

The rapidity of the emulsion can also be regulated by varying the quantity of salts in proportion to the water.

I am using here, gelatine pure and simple, but in my own practice I use metagelatine, prepared in this way: Take 300 grains gelatine, 9 oz. water, and 1 oz. ammonia, (.880); boil until the solution entirely loses its power of setting. This is then kept as a stock solution; with the addition of a few drops ammonia, it will keep almost indefinitely. I dilute it for use as required.

There are great advantages in thus having the liquid gelatine all ready for making your emulsion, instead of having to dissolve your gelatine as required. You thereby avoid the necessity for using heat at all during the formation of the sensitive bromide of silver. I keep this metagelatine for sale, put up in bottles, under the name of "glucine."

Well, I am now dissolving 5 grains of gelatine in 4 oz. of water, by the aid of heat—(Nelson's No. 1 gelatine). This done, I add 3 drachms potassium bromide and 2 grains potassium iodide. Let it dissolve. Next, I take 4 drachms silver nitrate, divide it in two equal quantities, and dissolve each separately in 2 oz. of water, or dissolve the whole in 4 oz. of water and divide the solution in two equal parts.

A good deal depends on the form in which the silver bromide is formed to start with.

Prof. Hough: How much more rapid than a wet collodion plate can you make an emulsion by this process?

Mr. Henderson: If you will define the rapidity of your wet plate, I should be better able to answer that question.

Prof. Hough: Well, take a neutral collodion and bath, and everything in the best possible condition for rapidity?

Mr. Henderson: I am certainly well within the mark in saying sixty times. If challenged, I should have no hesitation in guaranteeing to make an emulsion one hundred times faster than your ideal wet plate. In England, however, we have dropped this kind of comparison as too indefinite, and all tests are referred to Warnerke's sensitometer.

Next, I take one drachm of carbonate of ammonia, and add it to one half of the silver solution, (*i. e.*, to two drachms nitrate silver dissolved in 2 oz. water).

This, of course, converts a part of the nitrate into carbonate of silver. I may mention here that the sensitiveness of the emulsion will depend, *inter alia*, on the proportion of the total quantity of silver nitrate thus converted.

If I want a slow emulsion, I only convert about one quarter of it; if a *very* rapid one, the whole. My reason for dividing the silver in two parts is to ensure that a definite quantity shall be converted.

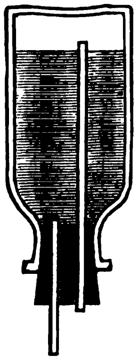
I would caution you to be careful that your carbonate of ammonia is pure, especially that it contains no chloride.

Now I add liquid ammonia until the precipitate re-dissolves. This ammonia must be weaker than I have been accustomed to use, for it takes a great deal of it.

Mr. Aiken: Why do you use carbonate instead of aqua ammonia?

Mr. Henderson: I think that question will be answered in the course of the demonstration, but I can answer it now. You would then get oxide instead of carbonate of silver, which would cause your emulsion to work foggy, if the oxide was formed in the light.

Next, I mix the carbonate solution with the remaining half of the nitrate solution, and by means of this dropping bottle, stir it in to the bromized gelatine. A light, flocculent deposit is the result. It is perhaps unnecessary to observe that this last operation must be performed in the dark room, while up to that point everything may be done in broad daylight.



This done, we will add four drachms of gelatine, and place the jar containing the emulsion in this pot of hot water to dissolve it, stirring it all the time.

You will see how, as the gelatine dissolves, it will break up the flocculent deposit. The temperature of the water in the pot should not be allowed to exceed 120° Fahr.

It is important to use a vessel of a certain size and a definite quantity of water at a fixed temperature if you want uniform results. For this quantity of emulsion I should take three quarts of water, and heat it to 120° before putting in the emulsion; then, the gelatine being dissolved, (with constant stirring, remember), the cover is put on and the whole business allowed to cool down. If the emulsion has not set at the end of three or four hours, it would perhaps, in your climate, be advisable to use ice or other artificial means to make it do so.

Mr. Aiken: Has the rapidity of cooling any effect on the sensitiveness of the resulting emulsion?

Mr. Henderson: I think not. You can make one thousand batches of plates by this process, and have them all exactly alike in sensitiveness.

I asked Prof. Haddon some time ago to make some experiments on the behavior of silver bromide under ammonia treatment; he tested the matter under the microscope and arrived at the conclusion that the smaller particles were dissolved and the larger ones agglomerated into hexagonal masses. His conclusion was that the hexagonal form is the most sensitive condition of silver bromide.

This gelatine (Heinrichs) is too hard to suit me, but perhaps for your climate it may be all right. It has been my experience that the softer the gelatine the finer the quality of the resulting negative. I will pass around some of this emulsion on pieces of glass, in order that you may judge the color and structure of it.

Now, gentlemen, I have shown you the principle and method of working of the Cold Emulsification process; if there are any points not exactly clear, I shall be pleased to answer any questions.

Mr. Hesler: Does the speed of drying affect the sensitiveness and clearness of the plates?

Mr. Henderson: Our English climate is very variable, and at first I found that a change of temperature or of the hygroscopic condition of the air during drying would cause circular marks on the plates. This I have overcome by adding a little thymol, dissolved in alcohol, just before filtering the emulsion for use. Its action is simply to prevent decomposition. My plates have always been dried in an open room, not by artificial means.

Prof. Hough: Did I understand you to say that you can make a dozen successive emulsions exactly alike?

Mr. Henderson: Yes; by always adhering closely to the same quantities and temperatures.

Prof. Hough: About what difference in rapidity would result from using 10 grains of gelatine in place of 5?

Mr. Henderson: You would reduce the speed more than one half. In a general way, I consider it unscientific to use a large quantity of gelatine as a retarder, and then accelerate by means of heat. Moreover, the less gelatine the silver comes in contact with the better, for the combination of the silver nitrate and bromide is not instantaneous, so that even if you have an excess of the latter the silver has some chance to combine with the gelatine. For this, among other things, I prefer to emulsify with meta-gelatine, because I believe this is all removed in the washing, and the gelatine subsequently added does not come in contact with free nitrate at all.

Prof. Hough: Suppose you used half the total quantity of gelatine to emulsify with?

Mr. Henderson: The ratio of speed would not be the same in this case; it is a diminishing ratio as the quantity of gelatine increases. Probably, taking the 5 grain emulsion as 20 Warnerke, the 120 grain one would read about 10.

It may be necessary to explain here that the numbers on Warnerke's sensitometer do not represent the ratio of speed, but every 3 figures about double the speed; thus, 13 would be twice as rapid as 10; sixteen, 4 times; 19, eight times; 21, sixteen times, etc.

Warnerke's sensitometer consists of a plate of glass, on which are superposed, step fashion, 25 layers of carbon tissue, of equal thickness; the plate to be tested is placed behind it, and the source of light is a tablet coated with phosphorescent sulphide of calcium, excited by burning a piece of magnesium ribbon; it has been proved by experience that a certain length of ribbon is sufficient to raise the tablet to its greatest luminosity. After excitation, the tablet is allowed one minute's rest before being used to test plates, it having been discovered that a very rapid falling off in luminosity occurs during the first few seconds, but that after a minute the decrease is so slow that it may be disregarded.

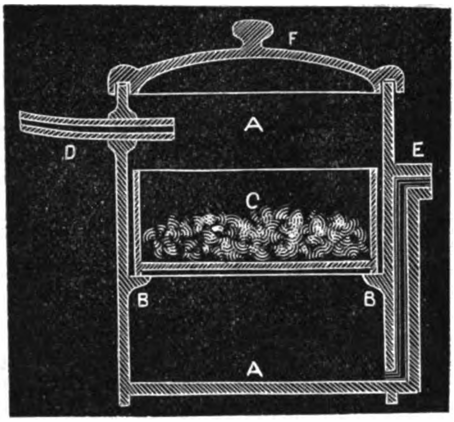
A member: Please give us a little information about washing.

Mr. Henderson: As to the time required for washing, much will depend on the temperature of the washing water. But it is a good plan always to keep on the safe side. After my emulsion is set, I put it in a vulcanite cylinder with both ends open; over one end is fastened a sieve of copper wire—I believe about No. 16 mesh—while through the other an ebonite plunger is introduced, expelling the emulsion in shreds.

The emulsion, thus broken up, is placed in a washing apparatus, constructed as follows:

A is a vessel of wood or stoneware—mine is of the latter material, by Doulton, of Lambeth—with a ledge B around its interior, at about one-third its height from the bottom; on this ledge rests a fine hair sieve, C, in which the broken-up emulsion is placed; above the top of this sieve a water supply pipe, D, enters; while at the bottom it is provided with a bent outlet E, of such height that the water level is preserved above the top of the emulsion in the sieve. F is a light tight cover.

You must be careful to keep the whole of the emulsion under water during the operation of



washing. I have traced some of my own failures to allowing some portion of it to adhere to the side of the sieve, where the water did not reach it.

When washed and re-dissolved your emulsion should measure about 15 ounces; if less, make it up to this quantity.

Asked by a member as to quantity of thymol necessary, Mr. Henderson replied that for this quantity of emulsion, 7 or 8 grains dissolved in ½ oz. alcohol would be ample. He had found no injurious action on the emulsion from the copper wire, but the wire itself was rapidly corroded by the ammonio-nitrate salts, and he would recommend that it be silver plated.

Dr. Garrison: Have you tried the addition of bichromate of potash to the emulsion before washing?

Mr. Henderson: I do not see any advantage in it. It will remove green fog, to be sure, but it changes it into gray fog, which is worse.

Mr. Aiken: What substratum do you recommend?

Mr. Henderson: I never use any. Mr. A. Cowan, of London, tried some experiments on the addition of various quantities of chrome alum to the emulsion, and found no difference in speed. If there was any difference in brilliancy, it was in favor of the emulsion containing the largest percentage of chrome alum.

I have not used formic acid, but it is used by some makers to prevent frilling. Frilling, by the way, is generally owing to decomposition of the gelatine, and if proper care be taken not to make the emulsion too hot, and not to re-melt it too often, there should be no trouble on this point.

Mr. Hesler: You promised to say something about iodide in emulsions.

Mr. Henderson: If you use much more than I have here—2 grains iodide to 3 drachms bromide—you will slow your emulsion considerably.

However, the more gelatine your emulsion contains in proportion to silver, the more iodide you can use without preceptibly slowing your plate. The reason is this:

Iodide makes a yellow film, more difficult for the light to penetrate; but the larger the proportion of gelatine the more transparent is the film; so that the yellow tinge is not so obstructive.

In landscape work, a pretty thick (opaque) film is an advantage as a safeguard against halation, and it allows more latitude in exposure.

Mr. Aiken: Do you find any advantage from the use of a chloride?

Mr. Henderson: None whatever. There is a question whether chloride can exist for any length of time in presence of free bromide.

I will relate a strange experience. Mr. Cadett gave me a boiling formula. By boiling 15 minutes he found that he got a certain speed. Boiling 45 minutes gave him a much greater rapidity, but beyond that he could get no benefit from prolonging the cooking. I tried his formula, and could only get the speed he attained in 15 minutes by continuing the boiling 2 hours.

Mr. Cadett's plates, by his formula, fixed quicker than those made by mine, although they contained about ten times the amount of iodide.

Mr. Cadett was under the impression that the iodide was precipitated and filtered out; but from experiments I made, I found that this was not so, and I have come to the conclusion that by prolonging emulsification at a high temperature, iodide of silver cannot exist in presence of free bromide.

The cold emulsification gives much more sensitiveness than boiling; a boiled emulsion may give as high a sensitometer number as an ammonia one, but in the former several figures will dissolve out in fixing; that is to say, they will not develop to printing strength.

Dr. Garrison: What developer do you recommend for these plates?

Mr. Henderson: They can be worked with any developer, but mine is generally prepared as follows:

Take 1 oz. pyro; ½ oz. potassium bromide; 15 oz. water, and 10 minims nitric acid, for stock solution. For use, dilute this down with water to 2 grains pyro per oz., and add to each oz. 2 minims liq. ammonia, .880.

I find no advantage in sulphite of soda.

Mr. Aiken: Do I understand that your stock solution of metagelatine is thirty grains to an ounce?

Mr. Henderson: Yes. Gelatine is boiled until it decomposes; the ammonia is added to accelerate the action; prolonged boiling without ammonia would answer the same purpose. I prefer Nelson's No. 1 for emulsifying.

Mr. Edgeworth: I believe you claim to make an emulsion with less silver than others.

Mr. Henderson: I have used as little as one grain per oz. and obtained fairly rapid plates, with good density. For opals or gelatino-bromide paper, I think this is just what is wanted. A heavy emulsion is fatal to brilliancy in this case.

I have made 37 oz. of emulsion with thirty grains of silver, but I do not recommend such extreme economy. I can, however, make a very good emulsion with the same quantities of salts I have used here, increasing gelatine and water to bring it up to thirty oz.

Mr. Burnham asking some question as to use of canary medium in daylight, Mr. Henderson replied that it was always advisable to use as little light as possible. Nearly all the trouble with fogging so often complained of with rapid plates, resulted from using too much light in handling them. He did not believe in chemical fog at all.

Mr. Greene: How much emulsion would you allow for an 8×10 plate?

Mr. Henderson: I am more familiar with some other sizes. For instance, 15 oz. of emulsion prepared according to the formula I have used to-night, should coat thirty-six $8\frac{1}{2} \times 6\frac{1}{2}$ plates, or a gross of quarters.

The more rapid the emulsion, however, the thicker your plates must be coated, as a protection against halation, for the reason that a blue film is so much more readily penetrated by actinic rays than an orange one.

Prof. Hough: Do you consider a very rapid plate as good as a slow one for general use?

Mr. Henderson: Yes; but it requires much more skill to develop it. Col. Stuart Wortley stated the case concisely when he said that he could teach any one to make an emulsion, but that to develop a plate was a science only to be acquired by long practice. If I was making plates for the trade, and wished to make money, I do not think I would put on the market anything more rapid than sixteen Warnerke, about the average sensitiveness of a Britannia or Wratten & Wainwright plate. Such plates as these any one can develop. Of course, if parties wanted more rapid plates, and I knew them to be capable of handling them, I would supply them, but should not consider it policy to put them on the market indiscriminately.

Mr. Henderson now passed around for examination some gelatino-chloride prints on opal glass, which were much admired for their brilliancy and warm reddish tone. He explained that the process was neither patented or secret, but consisted simply in coating the plates with a chloride, instead of a bromide, emulsion, and printing by contact similarly to the old collodio-chloride process—no development. Prints can be toned to any color desired.

The following is the formula:

Hard gelatine, 80 grains; dissolved in $1\frac{1}{2}$ oz. water.

Silver nitrate, 75 grains; in $\frac{1}{2}$ oz. water.

Dry sodium chloride, 21 grains; potassium citrate, 21 grains; water, $\frac{1}{2}$ oz.; warm and dissolve.

Warm the solution of silver and gently pour into gelatine; then add the sodium and citrate, also warm, stirring all the time. Pour in a dish to set. Work in a yellow light; wash in the ordinary way, but keep everything very cool, as this emulsion is very thin; then melt up and add 3 grains salicylic acid in 2 drachms alcohol, and 1 grain chrome alum in a little warm water; filter and coat.

You will find the emulsion almost as thin as water; if great contrast is wanted, work it thicker; the reverse for softness.

The emulsion will not keep, so make small batches as required, and use the plates as soon as you conveniently can, as they are prone to turn yellow. Tone in a borax bath, after a thorough washing; fix in hypo, 20 per cent, for at least 10 or 15 minutes; wash well and give a bath of alum.

These plates may be printed in the ordinary frames without difficulty. Push both negative and opal against one side and end of the frame, *i. e.*, into one corner. You may examine as often as you please.

Mr. Edgeworth: As the question of substratum has been raised, it may perhaps interest some of those present to state that nearly all the large dry-plate factories in this country have abandoned the use of any substratum, and now simply polish their glass on a cotton buffing wheel running at a very high speed.

Eastman uses a species of whiting on the buffing wheel, but I think the others use nothing whatever.

Mr. Henderson: One plate-maker in London, who has unusually clean water to work with, cleans his glass with soda and water, then with clean water and a rubber sponge, finishing with a rinse under the tap, and dries his glass in a cabinet over a Bunsen burner. I have a glass dryer at home, completed just before I left; have not thoroughly tested it yet.

If I used any substratum at all, it would be silicate of potash. Making plates solely for my own use, I have never found such a thing necessary. Possibly, if making for the trade, I might use a substratum.

Mr. Douglass, in moving a vote of thanks to Mr. Henderson, said he understood that gentleman had stayed over at some little personal inconvenience, in order to be present at this meeting, and he was sure every one present felt under a great obligation to him.

Motion seconded; carried unanimously.

On motion, adjourned.

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SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

The last regular meeting was held at the society's rooms, 1262 Broadway, on the evening of July 8, the president, Mr. F. C. Beach, in the chair. Mr. W. E. Partridge was elected secretary *pro tem.*

Upon motion the reading of the minutes of the last meeting was dispensed with. Several communications received since the last meeting were read, among which was a letter from J. J. Briginshaw, secretary of the London and Provincial Photographic Society, in which he stated it was the desire of his society to open a correspondence with this society, and to exchange any reports that would be of mutual interest. Accompanying the letter were sent the minutes of the last "Lecturette" of the association, held on May 8, 1884.

A motion was then made by Mr. Newton and carried, authorizing the president and secretary to exchange minutes of meetings with the London society as proposed, and reciprocate the favors shown in any way they deemed best.

The secretary read other communications from F. A. Greenleaf, of the U. S. assay office, Helena, Montana, expressing his interest in the cause of amateur photography and a desire to exchange specimens; also from Dr. John Butler, who was reluctantly compelled to resign from the society because of lack of time to practice the art; also a letter from T. R. Hallet declining to become a member.

Mr. John S. Hicks sent a letter of regrets and enclosed a few specimen prints of winter scenes.

The Chairman.—The formation of a National Association of Amateur Photographers has lately been suggested, and it has occurred to me that it would be a very good idea. A national association of amateurs composed of representatives of amateur clubs from all parts of the country, meeting once a year, would, it strikes me, be very desirable and tend to promote our favorite art science. Very few officers would be required. A motion to authorize the secretary to correspond with other amateur clubs in this country to further this end I think would be advisable.

Mr. Newton made a motion, which was carried, "That the president and secretary be authorized to correspond with such clubs as were known to us, with a view to the formation of a national association of amateur photographers."

The names of Mr. H. N. Grisdale and Mr. Wm. Munger were then proposed for active membership, and the names of Mr. Geo. H. Rockwood and Mr. John A. Knorr, as subscribing members. All were duly elected.

The Chairman stated that some of the members who went on the recent Hudson river excursion would relate their experiences in the development of their plates, and any difficulties which they encountered; he then called upon Mr. Newton for an account of his experience; in reply he said that it was the worst day's work he had had in the last ten years, and might almost be set down as a failure. He exposed eight plates in all. Upon one plate he had secured a double instantaneous exposure. He brought a proof of the negative to show how beautiful the picture was. Through the dark bank of the Hudson could be seen the bright white image of the steamer Albany filled with people, dashing along toward New York with all flags flying, while floating gracefully above her on another sheet of water was the picture of a schooner under full sail. He then exhibited two negatives made on plates of English manufacture, each having irregular insensitive patches in the film about 1½ inches in diameter. On laying them film side together in contact, it was noticed that the patches nearly matched making it evident that the insensitiveness was due to some cause not inherent in the emulsion itself. In the package the plates were packed with the films toward each other separated by a thin sheet of tissue paper.

Mr. Newton then remarked that the cause of the defect had been explained to him by the president as being due to the probable packing of the plates before the film was thoroughly dry, which caused some chemical action to be set up between the film and the chemicals in the paper, whereby the damp portion of the film was made insensitive to light.

In support of this explanation Mr. Beach exhibited two negatives taken by him some time ago, in the films of which were irregular insensitive transparent spots which exactly matched each other when placed in contact.

Regarding the success attained by other members on the excursion the chairman remarked, that Mr. Robertson had some of his plates frill badly while in Mr. Newton's soda and potash developer. Mr. Rich lost most of his plates by being light struck while changing them in the improvised dark room on the yacht. Mr. Dean, Mr. Grant and Mr. Chamberlain all had secured fair pictures. Mr. Metcalf exhibited some very fine views, and some instantaneous work of an excellent character. He used the Eastman special plate with ferrous oxalate developer. Mr. Beach stated that he had had very good success, having obtained eleven good pictures out of a dozen plates of four different brands. The twelfth plate he thought had been light struck before it was placed in the plate holder. He had developed them all with one kind of developer which he would explain later on.

The general results of the first field excursion were regarded as very satisfactory, and the wish was expressed that another should shortly be made.

Mr. Newton then gave a formula for preparing a substitute for ground glass, as follows:

Take water	3 oz.
Starch	30 grains.

He said: You need to mix the starch thoroughly with the water, and see that all the particles are broken up and incorporated; then boil it for about five minutes. The cooking is important and should be thorough. When this is finished the solution is then strained through a linen handkerchief or any fine piece of muslin. If it does not go through the cloth you can press it through; now let it stand until it is cold, then it is ready for use. Enough starch is poured on the plate to cover it; it is then carried to the edges and corners of the plate with a glass rod and the plate is drained until the proper thickness, is obtained.

In the particular sample which I gave the president, I added 10 grains of gelatine. Wherever you are, if you accidentally break your ground-glass you can always make a good substitute with the formula stated.

The chairman said he had tried the starched glass and found the grain much finer than ordinary ground glass, which was of value in focusing.

On behalf of Mr. Bartholomew, the inventor, the chairman exhibited a model of an improved drying box for sensitive paper. It was a square box, made of either wood or metal, large enough to hold about a dozen sheets, of paper, 18×22. It had a sliding top, allowing easy access, and the interior was divided horizontally by a perforated metal partition, located about three inches from the bottom. A vertical division was provided at one end for a lamp or gas light. Over the perforated metal partition are hung on wires the sensitized sheets, which are dried by the heat from the lamp, passing over from its chamber into the large drying chamber. A small door in the side of the box, at the bottom, allows the introduction of a saucer of ammonia under the perforated partition, making it easy to fume the paper after it is dried.

At the request of the chairman, Mr. Newton then gave a formula for a silver solution for silvering paper, which he claimed gave excellent purple tones without fuming, as follows:

Water	1 ounce.
Nitrate of Silver	40 grains.
Nitrate of Ammonia	30 grains.
Liquid Ammonia	3 minims.

Upon this solution the paper is floated for three minutes. The edge of the dish is placed towards the operator, and the paper drawn across it in such a way that the capillary attraction holds the paper in contact with the edge and wipes off the surplus silver. No fuming is required, but should it be used the ammonia should be half the ordinary strength. Fuming, however, would not produce much difference in the paper. After being in use for some time the bath will become acid, and must be rendered alkaline by the addition of more ammonia. It must turn red litmus paper blue instantly. The bath can be run down as low as 25 grains of silver to the ounce before the paper will give pictures of a brown tone; it should register from 54 to 56 by the hydrometer; it will always remain clear and white and should be kept in the light.

Mr. Mapes then asked some questions in regard to two negatives which he showed, which had a white deposit upon the greater portion of the film. A discussion then ensued and the conclusion of several gentlemen was that it was something unusual only with amateurs. It consisted of a failure to wash the plates sufficiently after they left the alum bath and before fixing in the hypo. The acid of the alum decomposed the hypo, and also the sulphur in the latter, which accounted for the deposit complained of. Thorough washing before fixing was the remedy.

The chairman then remarked that he had prepared a series of solutions for the purpose of making a few comparative experiments with the pyro developer to illustrate the important function which sulphite of soda plays in giving to the negative a clear, gray, quick printing color, and in preventing rapid oxidation of the developer during development.

He had exposed a few plates in the camera, and if time permitted would develop a few with the different solutions to show their effect. Some two years ago he had tried developing plates with dry pyro and carbonate of soda, probably the simplest formula which had been proposed, but he found, as many others had, that it produced thin slow printing negatives, full of detail, but of a disagreeable color. By introducing into the developer equal quantities of saturated solutions of sulphite of soda and carbonate of soda in combination with the usual amount of dry pyro, negatives of a bluish gray, quick printing color were obtained closely resembling negatives developed with ferrous exalate.

He had prepared a variety of solutions including pyro preserved with formic acid; pyro, formic acid, and sulphite of soda, with a 50 gr. to the ounce solution of granulated carbonate of soda: a 50 gr. to the ounce solution of granulated carbonate of soda, chem pure sulphite of soda, Mr. Newton's soda, potash and sulphite soda solution, and lastly a pyro solution and a potash and sulphite soda solution, the formula of which is given below.

Owing to the lateness of the hour, but two experiments could be made. A recess was now taken, and the president, Mr. Newton, and several gentlemen retired to the dark room to witness the experiments. The first included the successful development of four plates of two different brands in one mixture of the potash developer, prepared by Mr. Beach. The solution remained clear and was of a slight cherry color at the termination of development. When viewed by white light the negatives were of a clear, bluish gray color.

The second and last experiment included the development of a plate with—

Water	1 oz.
48 gr. to the ounce of Pyro preserved with Formic Acid,	50 min.
Carbonate Soda sol., (50 gr. to oz.)	3 drams.

The development was rapid, but after fixing and on viewing by a white light the negatives possessed the sickly yellow and green color about which the president had spoken. In a few minutes the solution became turbid and dark. The experiments illustrated very plainly the difference between the two forms of developer.

On emerging from the dark room the president gave the following as the formula, which he had used in successfully developing four different brands of plates used on the recent Hudson trip:

NO. 1—PYRO SOLUTION.

Warm Distilled Water or melted Ice Water	2 oz.
Sulphite Soda (crystals) Chem. Pure, 437 grs. to oz.	2 oz.
When cold add—	
Sulphurous Acid	2 oz.
And then add—	
Pyro (Schering's)	½ oz. or 218 grs.

Which is done by pouring the sulphite solution into the ½ oz. pyro bottle, and repeating the pouring out until the pyro is dissolved.

The resulting solution will measure five ounces and will be approximately a ten per cent. solution. Accurately speaking, one ounce will contain 44 grains and one dram 5½ grains of pyro. The solution is filtered and kept in a tightly corked bottle.

NO. 2—POTASH SOLUTION

Is made of two separate solutions, which are prepared as follows:

A { Water .. . . 4 oz.
Carbonate Potash, Chem. Pure, 437 grs. to oz.. .... 3 oz.

It will contain 327 grs. of potash to the ounce.

The next solution is—

B { Water .... 3 oz.
Sulphite Soda, (Crystals) Chem. Pure, 437 grs. to oz.. .... 2 oz.

And as the sulphite of soda will yield one ounce of water, the resulting solution will measure four ounces, and will contain an average of 218 grains of sulphite to the ounce.

The two solutions, A and B, are now mixed, forming a concentrated combined potash and sulphite solution, measuring between 8 and 9 ounces, which will keep indefinitely, and be of uniform strength at all ordinary temperatures.

In each ounce of the combined solution there will be 164 grains of carbonate of potash and 110 grains of sulphite of soda.

To develop a 5×8 plate, which has had a drop shutter exposure, take two ounces of water and add thereto 3 drams of the pyro or No. 1 solution—equivalent to 15 grains—and from 3 to 4 drams of No. 2, or the potash and sulphite solution—equivalent to 75 grains of potash and 54 grains of sulphite. The developing solutions thus formed will measure approximately 3 fluid ounces, and will contain 5 grains of pyro, 25 grains carbonate of potash, and 18 grains of sulphite of soda to each ounce.

When the solution is poured upon the plate the high lights appear rapidly, but the shadows remain clear, the details therein coming out gradually.

For a time exposure 2 drams of No. 1, and, to commence with, 1 dram of No. 2 are added to two ounces of water. If the image does not appear in a minute's time, a second dram of No. 2 is added, and is successively added by degrees until development commences. In this way a plate, about which the time of exposure is unknown, or which may be over exposed, can be successfully developed without the use of a bromide.

Among the advantages were that the solutions, by being in concentrated form, can be kept in small bottles, and be conveniently handled.

The potash solution is always uniform in strength and will keep a great length of time.

No restrainer is necessary; no clearing solutions are required.

Mr. Beach exhibited several negatives developed with this developer, which were very clear and brilliant.

Mr. Newton showed a number of transparencies made upon the new Anthony transparency plate, consisting of several marine and landscape views; they were developed by ferrous oxalate, very clear in the high lights, and of a black tone.

The work was much admired. Mr. Partridge had tried the plates also very recently, but in place of the ferrous oxalate developer, used carbonate of potash and pyro.

One plate he said was developed with 3 grains of pyro and 30 grains of carbonate of potash to the ounce, without bromide or sulphite of soda. The pyro was preserved with a little oxalic acid. Some excellent specimens were shown.

A discussion then ensued as to the merits of pyro developed transparencies, some members claiming that it was impossible to avoid the inevitable pyro stains, and others holding the opposite view.

The meeting then adjourned.

◆

Strolling, recently, on one of the South London Commons much frequented by the itinerant photographer, we spied one of the fraternity with an enormous carriage-umbrella under his arm. Our curiosity was stimulated, and we watched his proceedings. He was not long before he caught a sitter, and while he focussed and exposed the plate, his assistant held the umbrella over the sitter. "I wouldn't be without that umbrella for anything," said he to us afterward. "Why, I can take 'em in the open sunshine, and get a nice shade over the face, and they come out with the eyes first-class." This was very likely, but the *tout ensemble*—the simpering sitter, and the anxious assistant shielding her almost lovingly with the umbrella—made an extremely funny picture, quite worthy of the detective camera.

Photography as a means of verification has many applications, and we see that the proprietor of an advertising circular has hit on a new one. He proves that he has posted the six thousand copies he agreed to post, by a phototype reproduction of the official receipt for the postage of the six thousand copies of No. 1 of his circular, posted in bulk and without stamps.—*Photographic News.*

◆

We have received from Mr. E. L. Wilson, Philadelphia, a little leaflet entitled, "A Quiet Chat on the Prices of Photographs." It is designed for the reception-room table and for general circulation by photographers amongst their patrons, and contains a statement of the various items which go to make up the increased cost of modern photographs as compared with those of a few years ago, and also a list of prices charged by the leading galleries in twenty States of the Union.

PHOTOGRAPHY.

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There has been some talk of making a movement to establish a Photographic Section of the American Association for the Advancement of Science. Would it not be well first to organize a Photographic Section of the American Association for the Amendment of Constitution and By-Laws?

◆

At the last meeting of the Chicago Photographic Association, Mr. A. L. Henderson, while stating that in his own practice he used no substratum for gelatine plates, said that if he should use any at all, it would be silicate of potash. We notice that at the last (July 22d) meeting of the Photographic Society of Great Britain, in answer to a question of Mr. T. Sebastian Davis as to whether any members had experience with the water-glass substratum, Mr. Cowan pointed out that not only does the use of such a substratum cause the film to adhere to the glass, but it makes the emulsion flow over the plate almost as readily as collodion.

We understand that silicate of soda was referred to in this case, but presume the difference in the alkaline base will be of very little consequence.

We may mention that at least one dry-plate maker in this country has met with trouble arising from the alkalinity of this water-glass substratum.

◆

While on this side of the Atlantic the present summer has been, so far, a cool one, our friends on the other side have been treated to a long spell of (for England) exceptionally hot weather. The heat in some of the photograph galleries has been, at times, so great that sitters could not endure it, and had to give up the idea of having themselves made "beautiful for ever" until cooler influences should prevail. How about the operators?

Various devices for ventilating and otherwise reducing the temperature of studios have been discussed in the English journals. The best of them is the proposal to run a pipe from the basement to the skylight room with a fan driven by a small gas engine to create a current of air. This, however, presupposes that the photographer has control of the basement. We think an "exhaust ventilator" on the roof, similarly driven, would be more effective. The ascending current would be readily supplied by the stairways, etc.

◆

The relation between the keeping qualities of gelatine plates and the manner in which they are packed, which has been several times discussed by the Chicago Photographic Association, came up before the London and Provincial Photographic Association last month. The same theories which have been ventilated here were advanced there, and the general conclusion seemed to be that moisture and deleterious chemicals in the packing paper or "separators" were the chief causes of foggy edges, etc.

Mr. Cobb stated that since he had adopted the precaution of thoroughly drying his packing paper, he had heard no complaints. The paper he had been using was the ordinary chrome yellow paper used for dark-room windows. He had also lately been using "parchmentized" paper—paper treated with sulphuric acid and washed.

While in Cincinnati we had the pleasure of forming the acquaintance of Mr. E. J. Carpenter, secretary, and several members, of the Cincinnati Amateur Society. We found them agreeable, genial gentlemen and accomplished, enthusiastic photographers. They possess very comfortable and commodious quarters, having an ample side-light and a small sky-light, allowing them to practice portraiture with considerable success.

Like the Chicago Amateur Club, the Society embraces in its membership several medical gentlemen who employ photography as an auxiliary in their professional practice.

The dark room is very large, commodious and well-arranged; allowing three or four operators to work at one time. The windows are glazed with ruby glass and provided with yellow curtains. Gas jets are placed outside them, so that work can be carried on indifferently by daylight or gaslight.

Our Cincinnati friends believe in using good apparatus and making fair sized pictures. Very few, if any, 4×5 outfits are to be found among them; the usual sizes being 5×8, 6½×8½ and 8×10, with a good proportion of the latter.

Anthony's "Novel" and the new front tail-board Blair seem to be the the favorite cameras; while in the matter of lenses, the Morrison Wide-Angle and Rapid Copying seem to have almost a monopoly.

We must congratulate the amateurs of the Queen City on the excellence of the work they are turning out. Mr. Greene, who accompanied us—and who, it is generally conceded, is "no slouch" in landscape work,—said that he would have been proud to have produced some of it.

A FEW IDEAS SUGGESTED BY THE CINCINNATI CONVENTION.

Considered simply as an exhibition of photographs, it must be conceded that the late convention was fairly successful. We think everybody who attended it must have felt amply repaid for the expenditure of time and money by the lessons learned and pleasure derived from a careful inspection of the work displayed. And yet, even the exhibition was not what it should have been The number of really prominent men in the profession whose work was represented at Cincinnati was very limited, and those were mainly from the Middle and Western States. New York City, so far as we could ascertain, was wholly unrepresented. An American exhibition of photography without a single example of work from a metropolitan studio must seem an anomaly to any foreigner. We suppose the explanation is that the fraternity of that city have not forgotten the gratuitous insult they received from Mr. Seavey, during his (mal)administration of the office of local secretary; we fear the association will never recover from the effects of the mistake made in that appointment.

Be that as it may, the names of Sarony, Mora, Kurtz, Bogardus, Fredricks, and others, are sadly missed in an exhibition of this kind.

There were some Boston exhibitors, but they were not representative names. Where was Black, or Southworth?

Proceeding to Philadelphia, we find nearly the same state of things. Mr. Gutekunst was represented merely by examples of phototypes and window transparencies; not by any display of regular gallery work. Gilbert & Bacon, as we remember, were about the only large house fairly represented in this respect.

Baltimore had its share of representatives, but we miss the name of Bendann, which was a regular "stand by" in the old N. P. A. exhibitions. Baltimore, however, is suffering so badly from the low-price fever that it would be unreasonable to expect any very remarkable work from that quarter.

Again, it might have been expected that the geographical position of this year's convention would have attracted a large number of exhibitors from the Southern States. Such, however, was not the case. We did not see a single example of work from New Orleans, Mobile, Memphis, Nashville, Charleston, Galveston or Richmond, or, indeed, from any Southern point except Atlanta and Macon, Ga.—unless Baltimore is to be ranked in this category.

Mr. Landy was, to the best of our recollection, the only "representative" photographer of Cincinnati who made any exhibit.

Chicago, although probably as well represented as the majority of the large cities, certainly did not make the display it should have done. We mentioned in our last that we thought Mr. Rocher had not done himself justice; and this gentleman's exhibit, with that of Mr. Max Platz (who is well known to have been Mr. Rocher's assistant for a number of years, and whose work naturally exhibits a considerable resemblance to that of the latter), virtually, if not absolutely, constituted the Chicago contribution to the exhibition.

Mr. Ryder, of Cleveland, although a member of the executive committee, made no exhibit.

The fact is, St. Louis was the only large city anything like fairly represented. The reason is obvious: Two of the three dry-plate companies which offered prizes are located there; and it is natural that they should have made special efforts to secure a good representation of their plates from their own city. Moreover, the display which, on the whole, we are disposed to class as the best in the entire exhibition, was made by Mr. Cramer's own gallery.

Again, the only negatives shown at Cincinnati were a portion of those from which the competing pictures were printed, and were exhibited by the dry-plate companies as specimens of work on their plates; and, as we said in our last issue, these negatives constituted a very important part of the exhibition, so far as the education of photographers in dry-plate manipulation is concerned.

In short, we are forced to this conclusion—that the exhibition owes whatever success it achieved to the prizes offered by three manufacturers of dry plates, as a private enterprise, and that without this stimulant it would have been a dismal failure, like the convention proper.

The moral, we think, is obvious. The association, as at present run, really offers no inducement to *photographers* to contribute samples of their work. No prizes are given, the exhibition remains open for a space of time totally inadequate to the trouble and expense of preparing and shipping an exhibit, and the general public does not see the display, except by an accident such as that by which the Cincinnati display was thrown open to the citizens for a day and a-half. Even in this case, however, as no sufficient advertisement of the fact was, or could be, given on such short notice, the number who availed themselves of the privilege was exceedingly small. Furthermore, the time of year was unfavorable for securing the attendance such a collection of work merits. The Cincinnati display was singularly poor in landscape work, more so, we fancy, than any previous convention. And this in face of the constant increase in the number of persons devoting their attention to this branch of photography, and the vastly superior facilities offered in the shape of dry-plates and apparatus! We sadly missed some of our representative landscape men who have been wont to contribute to former conventions. The "Far West" was almost totally unrepresented—a few specimens of indifferent work by Millen, of Gunnison, Col., being about the only examples we can call to mind. Where was Mr. Haines, of Fargo? Where all the California landscape men?

As we stated in our review of the exhibition, Mr. Armstrong, of Milwaukee, made the finest display of landscape work there, and yet Mr. Armstrong kept his best specimens in two albums at the hotel, instead of on the screens at the Music Hall. Probably the reason was that room could not be found for them. As it was, many pictures were stowed away in corners where it was impossible to see them properly, and almost impossible to find them without a guide familiar with all the intricacies of the building. How would it have been if the supply of material had been what it should have been?

The questions frequently asked by new arrivals —"Where are the pictures?" "Is this a photographers' convention, or a dealers' convention?" suggest the query, Did the executive committee commit a blunder in giving up the main hall to apparatus, materials, backgrounds, etc., and stowing away the pictures in the galleries and museum rooms? As we had no time to devote to investigating the pros and cons of this matter, we prefer not to express any opinion. It is quite likely the light in the main hall would not have been so good for the pictures as that in the rooms allotted to them. And the background men, at any rate, were not especially favored either as to light or space, for many of their canvases were located where it was impossible to form any judgment of their effect.

Before dismissing this portion of our subject, we may point out a few facts which seem to have been pretty well established by this exhibition.

Firstly: It is now a foregone conclusion that "wet collodion must go." Those advocates of the old process, who have so far been persistently maintaining that gelatine cannot compete with it in excellence of results, are now virtually left "without a leg to stand on." Some of the large work at Cincinnati it would have been almost an impossibility to have produced at all by the wet process, while the average quality of the work shown this year will certainly compare very favorably with any collection of collodion work hitherto got together. It is, we think, safe to assume that this was exclusively a dry-plate exhibition; if there was any collodion work there, it must have been insignificant in amount and not marked in any way for distinction.

Secondly: Even those who admitted that for negatives gelatine could compete in quality of work with collodion, often maintained that for transparencies it could not approach the latter. This proposition we think has been effectually answered by Mr. Gutekunst's large transparencies on Carbutt's A plates.

Thirdly: Platinum has demonstrated its ability to compete with silver even for small work, and for book illustrations it offers such advantages over the latter as cannot fail to ensure its general adoption. We do not imagine it can compete in price with heliotype work for this purpose, where a great many copies are required, but it certainly ought to be able to compare favorably with silver prints in cost, because the item of mounting is dispensed with. Moreover, it is likely to largely displace carbon in the near future, especially for enlargements, and is already doing so to a very considerable extent.

Fourthly: One of the most striking features of this collection of pictures was the quantity of large work. This is undoubtedly one of the results of the general adoption of dry-plates, for by their aid this class of work has been placed within the reach of hundreds of photographers who could not attempt it before for want of the necessary apparatus or skill, or both. The superior rapidity of the gelatine plate has superseded the necessity for the huge and very expensive lenses formerly considered indispensable for the production of life-size negatives; the front combination of a good cabinet lens being now usually sufficient; then, again, it was no easy matter to flow a 20×24 plate, to say nothing of a 26×42; and the development of such a negative was quite an accomplishment, while a very large silver bath was indispensable for sensitizing, unless this operation was performed in a flat dish.

But now the plate comes to the operator all ready for exposure, and there is no more difficulty in developing a 26×42 negative than a 5×8.

All which is undoubtedly for the good of the profession at large; for large work pays better in proportion to the time and labor expended than cards and cabinets. Moreover, it tends to advance the dignity and importance of the art.

Fifthly: As will be seen from an account of the exhibits, an increasing amount of attention is being devoted to what may be called genre work —that is, to groups (or single portraits) designed to illustrate some motive or idea. As it is in this direction that photography can best maintain its claim to be considered fine art, this "sign of the times" is a most hopeful one. And here, again, while much may be due to the advance in artistic education of the photographer himself, without the gelatine plate he would have been utterly unable to accomplish many of the results shown at Cincinnati.

As to the sessions of the convention, they must go upon record as absolutely barren of results. Nothing was accomplished, or even discussed, but some changes in the constitution and by-laws, all trivial except that one requiring an initiation fee from all members (except employes) hereafter joining. Mr. Ryder's paper was the only one of any importance read. That of Mr. Traill Taylor, on "Photographic Progress," (printed in our last issue) was "tabled" without reading.

A great deal of time was wasted in discussing details which should have been settled in committee, and a good deal more owing to the presiding officer's ignorance and disregard of parliamentary rules and general incapacity to "handle" the meetings. These, however, were minor faults; the main part of the blame for this unmitigated *fiasco* must be shouldered by the executive committee, who had arranged no programme, or, from all appearances, done anything at all.

The attendance of photographers at Cincinnati was fully as large as could reasonably be expected; amongst them were many ready to impart information on a number of subjects, if a chance had been given them, and a still larger number eager to acquire such information; but no opportunity was offered.

It is the duty of the executive committee – or, if it is not, the constitution should be amended to make it so—to arrange and publish in printed form, a programme for the entire convention, giving the hours of meeting each day, with the papers to be read and discussed, and any other business to be transacted at each meeting. In order to do this, the committee must make all these arrangements beforehand, and see that the necessary papers are forthcoming. We fail to see why there should be any more difficulty in procuring them than in the case of other scientific bodies, although it must be admitted that the scant attention paid to some of the papers read at previous meetings—well-prepared, and on subjects in which photographers ought to be interested—was not calculated to encourage future efforts.

If such a course had been followed, every delegate present would know that a certain subject was coming up at a certain meeting, and if he felt any interest in that subject, would take care to be present. It would, of course, be the duty of the executive committee to see that the subjects were such as to interest as large a number as possible. But it is useless to expect to hold a large audience while a few men are wrangling over some petty change in the by-laws. Nor is it likely that much can be accomplished when the president starts out with the idea of getting through the convention with the least possible labor to himself.

Again, the idea of calling a meeting to order at 10:30 A. M. and adjourning before noon, is an absurdity. There should be but one session a day—at any rate, only one daylight session—which should open at 10:30 A. M. or thereabouts, and adjourn about 3 P. M. As it is, by the time the meeting settles down to business, a motion to adjourn is made, and under such circumstances it is ridiculous to expect that any solid work will be accomplished.

It is, perhaps, a debatable question whether the association should pay for a stenographic report of its proceedings, or whether that should be left to the individual enterprise of the photographic journals; but if the association undertakes the work the executive committee should see that competent men are employed for the purpose. If there had been any technical discussions at Cincinnati it is certain the short-hand reporters there employed would have made a complete mess of it. Even as it was—with an exceptionally easy task before them—their report is both incomplete and inaccurate. It was decided, moreover, that copies should be supplied to all the journals; yet it appears that only four of them received any. Mr. Weingartner claims that the reporters told him that they had forwarded the others; but we do not exactly understand what right he had to take their word for it.

The Cincinnati Music Hall contains one of the finest organs in the country; will the executive committee be pleased to state why that organ was not once heard during the convention?

The convention was honored by the presence of a gentleman whose services in advancing dry-plate photography have won him distinction all over Europe. This gentleman very kindly volunteered to demonstrate before the convention a process of emulsion making with which his name has become identified. Perhaps Mr. Kent will explain why this offer was neither accepted nor even laid before the convention? Reasons enough have been suggested, but we think the fraternity would like the president's own version of the matter.

It seems to us that the P. A. of A. will need to be reorganized on a different basis if it is to become in any sense a permanent success. In the first place, the time of year at which its meetings occur is unsuitable. People do not like to sit for a number of hours in a closely packed hall with the thermometer at 90°; and the out-door attractions are liable to be too strong at this season. It has been urged that midsummer is a dull time with photographers generally; but, while it may be so with a great many, there are also many others who could better spare the time at some other season; and we think, on the whole, October would bring out as large an attendance. February, at any rate, is not usually a busy month, and would possess the recommendation that it would probably be more comfortable in-doors than out.

This question of season has another aspect; it is fully as important, in our judgment, that the general public should see the exhibition as that the members themselves should do so; and we believe with proper management a considerable proportion of the expenses might be recovered in this way.

But it is useless to expect such an exhibition to be well patronized in the dog-days, when, in addition to having the temperature to contend against, you meet the difficulty that "society" is "out of town."

Again, it seems on the whole advisable that the association should have a permanent location, although we are aware that much may be urged in favor of the peripatetic system.

We come now to the vexed question of prizes. Whatever may be the objections to giving prizes—whether in form of money, medals, or diplomas, or a combination of any two or more of these—it is pretty evident that no extensive or energetic competition will be secured unless some inducements are offered. We have already expressed our conviction that the exhibition of 1884 owed its existence practically to the prizes offered by the dry-plate manufacturers.

The exhibition, as we have said, should be open to the public, and an admission fee charged; but the first few days the members alone should be admitted, in order that they might have ample room to carefully study the work. It should remain open at least two weeks, and perhaps longer, and should be open evenings.

The delivery of all exhibits a certain number of days before the opening (say a week) should be insisted on; every picture (or set of pictures, according to circumstances) numbered, and a printed catalogue issued at a price which would yield a small profit on its actual cost. Perhaps it might be advisable to make it free to members.

It will doubtless be urged that all this is visionary and impracticable; that the public won't attend, and so forth; but we fail to see why, if similar exhibitions are a success in other countries, they should not be here. The experiment has never been fairly tried; the conventions have always been held at an unsuitable season; have been insufficiently advertised, so far as the laity are concerned, and sufficient inducements have not been offered to bring together a collection of work which should be really representative.

Then there are a number of important applications of photography which have never been represented at these conventions; in fact, no effort has ever been made to have them represented. Photo-micrography is one of them. Astronomical photography is another; and there are a number of others which might be specified.

Of the almost innumerable photo-mechanical printing processes, only one—the phototype of Mr. Gutekunst—was represented at Cincinnati. Not a single specimen was there of the Woodburytype or Stannotype; not one of any of the block printing processes—Ives, Meisenbach, etc. —or a solitary photo-lithograph.

There were a few window transparencies—all by one exhibitor—but we did not see a single lantern slide.

In fact, the association has been run on too narrow principles, and by men of too narrow views. The same meagreness characterized the exhibits of apparatus. Large areas were occupied with quantities of every-day stock, so that the space devoted to this department presented the appearance of an exaggerated stock-house; but in point of novelty or scientific interest it was sadly lacking. In fact, the manufacturers and dealers had evidently laid themselves out rather to sell "standard" goods than to exhibit anything interesting; and thus dozens of camera boxes of one pattern and size might be seen, and backgrounds by the mile, which could have been much better exhibited by means of photographs, obstructed the lobbies and corridors.

Not a single optical lantern was to be seen; although photography is almost the exclusive agent now employed in the manufacture of lantern slides, it would have seemed from this display that photographers were entirely ignorant of the existence of such an instrument. This may be partly accounted for by the fact that the lantern has been persistently ignored by the photographic press in America, which, like the P. A. of A., has hitherto been conducted on altogether too narrow a basis.

In conclusion, we repeat that the Photographers' Association of America, if it is ever to be really successful, and to command respect at home and abroad, must be reorganized on a new and broader basis; there is no reason why it should not be for America what the Photographic Society of Great Britain is to that country; but it will never be so until it is conducted on similar principles.

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We have received from Mr. T. H. Blair, of the Blair Tourograph and Dry-plate Co., a complaint that our notice of their exhibit is likely to do them more injury than good. Giving Mr. Blair the "benefit of the doubt," by assuming that he is not fishing for free advertising, we will proceed to explain.

In describing his new "combination" portrait box we said "the front part works an 8×10 plate with the usual carriage movement," and, "there is no carriage, of course, on the 14×17 end, which is furnished with a plate-holder having an ingenious curtain slide, etc."

We do not think there is much danger of any practical photographer misunderstanding this, but as Mr. Blair, himself, according to his letter, has done so, it may be well enough to state that by a "carriage movement" we mean the usual sliding or repeating back supplied with all first-class portrait boxes for cabinet or card work. Mr. Blair seems to have understood it to signify that the 14×17 part of the box had no *bed*, though how he could possibly make such a mistake is a mystery, seeing that we distinctly said, "The *bed* of one is made to slide into that of the other."

We would like to know, further, how it would be possible for *both parts to be provided with double swing*, which we distinctly stated to be the case, if the rear part had no bed?

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PRIZES AT THE CONVENTION.

The committee on awards made their report as follows:

THE CRAMER AWARDS.

CINCINNATI, July 30, 1884.

Mr. G. Cramer.—Your committee on awards having performed the duties assigned to them beg leave to submit the following report.

For first prize on work 11 × 14 and larger, F. W. Guerin, St. Louis, Mo.

For first prize for best collection of cabinets and other sizes below 11 × 14, J. E. Hale, Seneca Falls, New York.

For first prize for best collection of views, J. Landy, Cincinnati, Ohio.

Your committee would recommend honorable mention of the following exhibits:

Scholten, St. Louis; Max Platz, Chicago; Gilbert & Bacon, Philadelphia, Pa.; O. P. Scott, Quincy, Ill.; Blessing & Kuhn, Baltimore, Md.; H. N. Hardy, Boston, Mass.; D. A. Clifford, St. Johnsbury, Vt.; O. M. Pausch, Newark, Ohio. Had Mr. Cramer permitted the collection made by his operator, Mr. Krueger, to be entered for competition it would certainly have secured the prize and should have special mention.

Respectfully submitted,
JOSHUA SMITH,
W. H. POTTER,
G. M. CARLISLE,
C. T. STUART,
S. J. DIXON,
Committee on Awards.

THE ST. LOUIS DRY-PLATE CO. AWARDS.

The St. Louis Dry-Plate Company six prizes of $100 each for the best display of photographs made on their plates.

W. H. POTTER, Indianapolis, Ind.
D. R. CLARK, Indianapolis, Ind.
F. W. GUERIN, St. Louis, Mo.
STRAUSS BROS., St. Louis, Mo.
C. W. MOTES, Atlanta, Ga.
T. H. DOERR, Louisville, Ky.

HONORABLE MENTION FIRST-CLASS WORK.

D. P. Thompson, Kansas City, Mo.
J. J. Kirkness, Baltimore, Md.
Leo Weingartner, Cincinnati, O.
Tensfeld & Kuhn, St. Louis, Mo.
George Heyn, Omaha, Neb.
C. H. Tonndorff, St. Louis, Mo.

THE INGLIS AWARDS.

Mr. Cook Ely, of Oshkosh, Wisconsin, took the first prize.

Also Mr. Elton, of Palmyra, N. Y., took a prize.

REPORT OF THE PROCEEDINGS OF THE FIFTH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

SECOND DAY.

CINCINNATI, July 30, 1884.

The convention was called to order at 10:30 A. M., by its President, Mr. Kent.

The President—The first business in order is the report of the nominating committee. Mr. Carbutt is chairman of that committee; is he present? If not, Mr. Carlisle will please come forward.

A member—I think Mr. Carbutt is not ready to report.

The President—We will defer that business for the present, and will proceed to miscellaneous business. Anybody that has any business of that description will have an opportunity given at this time.

Mr. Blessing—Mr. President and gentlemen of the convention: Last year I had the honor of addressing you a letter on the subject of prices, which was read and discussed at some length, but unfortunately my views and suggestions were misunderstood, and the discussion took the wrong direction. I was understood as wanting the convention to fix the price to be charged for photographs. If first-class cabinet photographs are worth eight or ten dollars per dozen, let us say so. If second-class photographs are worth six dollars per dozen, let us tell the public so; and if another class of photographs can be made honorably and honestly for three or four dollars per dozen, let us call them third-class, and tell the people so. But if good work cannot be made for one dollar per dozen, one dollar and a half per dozen, two dollars per dozen, or two dollars and a half per dozen, let this convention say so in terms not to be misunderstood by the public, so that everybody will know what estimate to place upon the productions of the "Cheap Johns," who are so lavishly advertising the best work for one dollar a dozen, and absolutely humbugging many intelligent people into their places of business. I have prepared a set of resolutions embodying my ideas concisely and ask this convention to adopt them or substitute something better:

"*Resolved*, By the Photographic Association of America in convention assembled, that first-class cabinet-size photographs cannot be made for a less price than eight dollars per dozen; second-class not less than five dollars, and third-class not less than three dollars per dozen

"*Resolved*, That the price charged by the proprietor of any gallery shall class his work.

"*Resolved*, That the photographer who works for prices less than those quoted is compelled to use cheap material, employ cheap and unskillful assistants, and will give his patrons inferior and unreliable work."

Mr. President and gentlemen, brother laborers in the field of art: do not leave Cincinnati until you have put yourselves squarely on record in regard to prices. For the evil is growing, spreading and widening, and will continue to eat as doth a cancer, until photography becomes a byword and a reproach. We all know that silk can be had at fifty cents a yard, and silk at five dollars a yard, and it is no hard matter for the ladies to understand which is the best. Let us make the price of photographs as easy of comprehension. If my competitor next door makes photographs for half what I am charging, and my patrons ask why I cannot make them as cheap, I have to make the best defence I can. In doing so if I make the case strong they condemn me for it on the ground of being uncharitable and unneighborly. But let the convention sanction a basis for prices, and then each one of us can make such local use of it to suppress the fast-widening circle of cheap pictures as he thinks best. Mr. President, if all of us were in your position, whose work stands Extra No. 1, then there would be no necessity for urging this convention to take action on this matter. But come with me to Baltimore, and see the pitiable condition of photography to-day, brought about by one man through spite. But I will not harrow up your feelings by reciting the condition of our fair Art there. Suffice it to say that prices range from one to two and a half dollars for cabinets in the majority of the galleries. You all live in glass houses and are as liable to suffer from the same cause as we in Baltimore; therefore, I earnestly entreat you not to let this opportunity pass of putting your condemnation upon the ruinous practice of cutting prices.

Mr. Klauber, of Louisville—Mr. President: I have just arrived this morning, and I would like to be excused by the convention for not being here on time, being one of the officers I am informed that there are going to be some changes made in our by-laws, so whoever has got that in hand, I would like to make one suggestion, which I find is something that is very necessary for our organization. First, that we elect a permanent secretary for the convention, and that the executive committee, whoever they may be, shall have power to appoint a local secretary. Now we have but one secretary, and at the last meeting we had a great deal of trouble to find a secretary who lived in Cincinnati. Now a permanent secretary, who is a member of the executive committee, could live almost anywhere; then if we get a good secretary once, we could keep him. Now you have to change your secretary according to your location. I believe if you elect a secretary, and give the executive committee and President power to appoint a secretary to do the local business, you will get along a great deal better. I make that suggestion as we need two secretaries—one to attend to the hall and the other to the convention. That is something that I have been thinking over a great deal. I see there is some resolution here in regard to changing our by-laws, which I think we have to do. It is very necessary. I will speak about that hereafter.

The President—If any one has any remarks to make on the subject they will have an opportunity to be heard. There is an opportunity while we are waiting for the report of the committee on nominations for any gentleman to propose any business that is in hand; I shall be glad to hear from anybody. No one responding, the President said: I propose that the gentlemen all put on their hats; that is the fashion in a Quaker meeting; and you must all be careful not to speak until all the others have been heard.

Mr. Gentilé—Mr. President, directly after the adjournment of the last meeting I received a cablegram from Mr. H. Baden Pritchard, wishing to send his congratulations to this association. As it has never been made public, I should like to take this opportunity of doing so. As I said, it was sent by Mr. H. Baden Pritchard, the late editor of the *Photographic News*, who recently died in England. He simply sent his congratulations to the association, and I think that inasmuch as he was a gentleman very prominent indeed in photography—I imagine that nearly every member present has read some of his works—we might make some remarks of condolence with regard to his decease. I think it would not be inappropriate for this association to have some resolution made in that regard.

Mr. Carlisle—The only way that Mr. Klauber's suggestion may be acted upon is by an amendment to the constitution, and it may be necessary for Mr. Klauber to make this amendment at this session so that it may be acted upon at the next.

The President—That is his intention.

Mr. Bellsmith—I move that the President name a committee to take in hand the alteration of the constitution and report at our meeting to-morrow.

The President—I understand that no committee will be necessary for that. There will be a resolution introduced this morning which will lie over until to-morrow for action. A resolution to alter the constitution must be introduced at least one session before it is voted upon; that resolution will come this morning.

Mr. Klauber—Mr. President, I coincide with the last speaker. If you want to change any laws and wait until you have resolutions here, and talk about them, it will take more time than you have to spare. Therefore, it would be better to have a committee appointed, say of three, to whom all resolutions affecting our present by-laws and constitution should be referred, with instructions to report to-morrow, so that you have it in proper shape. If you have resolutions introduced here, this gentleman will have one and this one will have another. In all well regulated bodies the first thing they do is to appoint a committee on by-laws. They have power to prepare what they think is necessary, and then the body here can resolve itself into a committee of the whole, and if it is all right, pass it. This way you get a resolution here, and one there, and nothing to work upon. A committee of three can do a great deal more than if you have it before the whole body; therefore, I move that the President appoint a committee of three to prepare an amendment to our by-laws, and do whatever is best for the future of our association.

The motion was seconded and carried.

The President then appointed as a committee to revise the by laws, Mr. E. Klauber, of Louisville, Mr. Banks, of Little Rock, and Mr. Bellsmith, of New Jersey.

The President—I trust that this committee will be prepared to report to-morrow morning. I also wish to appoint a committee in the matter spoken of by Mr. Gentilé, in regard to H. Baden Pritchard. I will appoint Mr. Gentilé a committee of one to draft resolutions on the death of H. Baden Pritchard, to be presented to this meeting to-morrow. I notice in the room a distinguished gentleman, Mr. A. L. Henderson, of England, a name you are all familiar with. We shall be glad to have Mr. Henderson come forward to the platform. I notice present also, Mr. Edward L. Wilson, who will also have the kindness to come to the platform. I have now the distinguished honor to introduce to you Mr. A. L. Henderson, of England.

Mr. Henderson, having come upon the stage, addressed the convention as follows:

Mr. President, ladies and gentlemen: I consider myself very highly honored indeed to have such a reception from you. It is certainly more than I expected when I left my own shores to come to your great country here. I must say that there are several things in connection with your country that I do not like. For one, it is too large. I do not like your mosquitos. My wife doesn't like them either; she is confined to bed this morning from the effects of mosquito bites. I am sorry to say that I am not a photographer at all; my forte is more in the chemistry of photography, and I have done the best I could to forward photography by that means. You are, no doubt, all familiar with the articles that have appeared from my pen in the English journals, and have been often copied in the American journals. I am here as the representative of an English society, the London and Provincial Photographic Association. I came over to make a short visit, and while I have been here I have been very courteously treated by your citizens. I am no speaker, I am a photographic chemist, as I mentioned before to you. I thank you very much for allowing me to visit your society here, and I shall go home with a very pleasant recollection of the great progress that I have seen here.

The President—I will inquire if the chairman of the committee on nominations is here, Mr. Carbutt. While we are waiting for that committee we shall have the pleasure of listening to the address of Mr. Ryder on the subject of the "Business Management of Photography."

(Mr. Ryder then came forward and read his paper, published in our last number.)

Mr. Bellsmith—I wish to move that the subject of prices—the discussion of prices—be taken up now; that all arguments that may be made may be concentrated to this session.

The President—The motion is, as I understand it, that the subject of prices which has been discussed in the paper given us by Mr. Ryder, of Cleveland, be continued at this time. Anybody who has any ideas to present upon that subject will now have an oportunity of doing so. As many as are in favor of it say aye.

The motion was carried unanimously.

The President—There is another matter before the convention, and an opportunity will be given for this later.

Mr. Cross—The subject before the house is one of the utmost importance to all; it is one that we are all interested in. I think this convention should show its position on this question at this meeting. A man should raise his price to such a figure as will enable him to turn out good work and make a fair profit. I move that this society put itself on record as favoring an advance in prices all along the line. It is a move in the right direction. One man cannot do it alone; but if the society has made a move he has a start. Let us make the start, and move to advance the prices. I move that there be introduced a resolution that we all raise our prices.

The President—A motion is made and seconded, that it is the sense of this meeting that every member shall do all he can towards the elevation of prices; that is understood but it is well enough to put it in the form of a motion.

Mr. Hesler—We know that there are lots of men in the profession who believe that their work is not worth more than they charge for it; they have got no good opinion of themselves, and of their work. Now, all the resolutions we can offer here will do very little towards lifting the thought of those men; the point is for every man to constitute himself a committee and appeal to the world through his prices, through the quality of his work and through his own estimation that his work is worth all he charges, and not give them a premium to buy his work, but charge prices that will pay for the work and leave him a fair and reasonable profit.

Mr. Cross—What Brother Hesler has stated is true. We want to raise the prices; we want to show that that is the feeling of this meeting; it will help; it is a little start that points in the right direction. I move that the sense of this meeting is that every one raise the prices to the best possible figure.

The President—There is an opportunity for further remarks.

Mr. Brooks, of Mississippi—I am a very small man, but I have some very large ideas. I am also a very poor man, but I have some very rich relations. I want to state to this convention that I feel that this honorable body of American photographers should not condescend to allow a man upon the floor of this convention who would make photographs at the pitiful sum of a dollar and a half a dozen cabinet photographs. I don't wish to detain this convention or to bother you, I feel too little; but I want to put a flea in the ear of some of those tin typers here, just one. I know there are a great many men that make their living by making tin-types; I make a great many of them; it is perhaps a third of my business, although I don't pretend to prostitute it. I am sorry to say that most of those that make them, make them so cheap that it degrades their profession; this is as true of New Orleans as it is of Boston or New York. To those tin-typers who are making these tin-types for twenty-five cents apiece I would say to you that I get fifty cents for every one that I make, and I make a great many of them at fifty cents apiece and not at twenty-five cents a dozen and four for a quarter, but fifty cents each. I speak of this because I know it to be somewhat of a surprise to some of the Northern and Eastern men in that line of business. I very often have a customer come into my office who wants four or five or six of these tin-types, and I get two dollars for four tin-types; and so you see that you can get good prices if you demand them.

Mr. Blessing—From the discussion that has ensued I have not seen anything that covers the ground as well as my resolution. If this convention puts itself squarely on record upon the question of prices, and says that third-class photographs cannot be made for less than three dollars a dozen without giving your patrons unreliable work, it is a square proposition and one that cannot be misunderstood. Let us take no doubtful action on the question of prices, and if we say that three dollars is a fair price for third-class work and that it cannot be made for less, it covers the ground. We all know that silk can be bought for fifty cents a yard and for five dollars a yard, but we all know the difference. Let us make our prices as easy of comprehension.

Mr. Inglis—I think that Mr. Ryder's address should be published in pamphlet form, and I would move that the members of this association each contribute fifty cents or a dollar, and send the pamphlets to the fraternity for the benefit of those who are not here.

The President—There is a resolution before the house which I trust we will dispose of in a few minutes.

A Member—I hope that the resolution of Brother Cross will prevail and I think it will help to establish a standard that we can go by.

The President—The question is called for, but it is a good ways back, and I have forgotten what it is.

A Member—I move, as an amendment to the motion that is before the meeting, that this convention shall have this address, to which we have listened, printed in pamphlet form, not that it should not be printed in all the journals, but that it shall be printed in pamphlet form, and that we as an association shall give it gratuitously to the photographers throughout the country, that they who have not been able to be here shall have the benefit of that address, which has struck to the foundation as he has given it to us to-day. Let us take the advice that he has given us there; let each one of us begin to scrub our own doors and stand upon our own bottom; and if we value our services at fifty cents a dozen let us do it; let every man assert his manhood and charge a price that is a living price, and see if he cannot do better in one year than he has done at this miserable price of a dollar a dozen.

The President—The amendment being in the line of the resolution I shall consider it in order. Is it seconded?

The motion was seconded.

Mr. Ryder—While I am deeply grateful to my friends who think well of the little thing I have written, I feel a delicacy about its being embodied especially in a pamphlet; it will go through all the journals, and every word that I have said is as well known to every man here as it was before I said it. I am very sensible of the compliment, but I would be glad if Mr. Inglis would withdraw his amendment.

Mr. Inglis—I will not withdraw my amendment. It is the best thing I have ever heard; I have never heard the subject discussed better. If we do what I propose in the amendment let the association do it nobly. If there are no funds available for this purpose, let a voluntary subscription be taken up for it, and let us not only have it published in all the papers throughout the world, but in pamphlet form, and bring ourselves to such a point that we may be looked upon as worthy men. At the present time photographers are a low, mean, contemptible set. This is simply plain language; you do not need to look into a dictionary for the meaning of the words, but it is the truth.

Mr. Blunt—I think it will be a more proper course to subscribe one dollar to pay for extra copies of the *Philadelphia Photographer* and have it distributed to all the "Cheap Johns" of the United States, and have it printed in that paper.

Mr. Inglis—As against the remarks that have been made to the amendment I do not object in any way that all the journals should publish it, and if the journals are liberal enough to distribute it let them do so; but let us have it in the pamphlet form and every photographer will have it and read it more surely than if he receives it in a paper.

The President—The resolution is that the able address, which has been delivered by Mr. Ryder, be published in pamphlet form to be distributed throughout this country. As many of you as are in favor of that say Aye.

The motion was carried.

The President—Mr. Wilson has a few remarks to make.

A Member—We have only voted upon the amendment.

The President—The amendment in the line of the original motion has prevailed. I do not deem it necessary to put the original motion in this case; it is not required.

Mr. Wilson, of Philadelphia—Mr. President, I have enough material here to take the rest of the morning; but I will only take about four minutes. First, I have here a copy of the minutes of our last meeting, a present from the publishers of the *Photographic Times* and the *Philadelphia Photographer*. I have a motion to make that the Executive Committee take some means of notifying the public to witness this most magnificent exhibition of photographic work known in the history of photography, and that the matter be referred to the Executive Committee to devise and use all means they can to get the people of Cincinnati here to see this exhibition to-morrow and next day; so that the world may know what we can do. This will be one great step towards the elevation of prices. First lift yourself, then your prices, and the world will help you. The next thing I have is a letter of invitation. It is written to Professor C. F. Himes, one of our oldest amateurs, and who is to-day conducting a school of photography at Mountain Lake Park, Maryland. The letter is from Charles R. Baldwin, President of the Mountain Lake Association. The letter is an invitation for the association to hold its session of 1885 at Mountain

Lake Park. (Mr. Wilson then read the letter; also a letter from Prof. Himes.) I now move that this communication be referred to the committee on location, or if not, that when the report of the committee on location is received, this courteous offer be considered. I have here a description of Mountain Lake Park which accompanies the invitation.

It was then moved and seconded that the invitation to Mountain Lake Park be discussed before the committee.

The President—The committee will please take this matter into consideration in fixing a place of meeting in 1885.

Mr. Wilson—One thing more and I am done. It is on the subject of prices. Those of you who may read the best magazine cannot doubt the sincerity of the editor in the matter of raising prices, and to prove this further I have published a little pamphlet which I have brought with me on this subject. It hits the nail on the head and is intended to be a help to those who want to be helped. I believe if we could go around as missionaries, those who are here would confess that their prices are not what they desire. Our brother Ryder has discussed the thing thoroughly and this little pamphlet will follow it up. Remember that we are sick; let us begin to sweep the door steps now.

The Chairman—I notice the chairman of the committee on nominations present. Is he ready to report? If so we will have the report now.

Mr. Carbutt read the report of the committee. The committee nominated for President, James Landy, of Cincinnati; for Secretary, H. McMichael, of Buffalo; for Treasurer, D. W. Carlisle, of Providence; for Executive Committee, J. H. Kent, of Rochester, and William Armstrong, of Milwaukee. Mr. Carbutt stated that they had a partial list of vice-presidents.

The President—The list of vice-presidents may properly be left over until to-morrow morning's session. Gentlemen, you have heard the report of the committee, what will we do with it? The matter has to lie over of necessity until to-morrow morning.

A Member—I move that the report be received and the committee continued until to-morrow.

A Member—I would suggest that the report be taken back and the committee consider what Mr. Wilson has told us.

The President—That is not necessary. Are you ready? The question is that the report be received and the committee be continued. As many as are in favor will say aye.

The motion was carried.

The President—I would like to announce at this time that at three o'clock this afternoon there will be a group taken from the front steps of this building, promptly at three o'clock, local time.

Mr. Weingartner—As was announced yesterday there will be an excursion to-day to the Zoo. The round trip tickets to the Zoo and admission will be thirty cents. The tickets can be had here at the table after the meeting, and we start promptly at four o'clock. We accommodate about two hundred on each train, and we start promptly at four o'clock from this building.

The President—Mr. Seavey has asked permission, and has received it, to make a demonstration of a subject on the platform to-morrow afternoon at 2:30. A gentleman asked me if there will be any demonstrating to-day. The sun is on the platform and we will be unable to use it.

Mr. Ryder—Ladies and gentlemen: In the matter of Mr. Seavey's demonstration to-morrow I will further announce that he has a special model, a very beautiful young lady, who will be draped in the Greek costume, and it will be a great treat to all to see the effects that Mr. Seavey purposes to show and produce at the time mentioned, 2:30. I hope that he will have a fine audience as his demonstration will be something rather attractive and interesting to every one.

The President—Mr. Wilson, will you please state your resolution in regard to the matter of admitting the public to our exhibition?

Mr. Wilson—I did not make any.

The President—Will you make it as a resolution?

Mr. Wilson—I merely suggested that the Executive Committee do what they can to get the public here to morrow or next day either by advertising in the public papers or letting them know in some way that there is such a show, and let them come and see it. Yesterday I had a talk with General Goshorn, who was walking around alone, and he said he had offered to advertise at his own expense this magnificent and surprising exhibition we have here. Let the public come in and let us pound the fact into their heads that photography grows and we are going to grow with it, and our prices are going to grow.

A Member—The object of bringing pictures to this exhibition is for the public to see them and know what photography is and can do. If we charge them twenty-five cents, but a very few will come to see them. For that reason the public should be notified that they can come here free and see the progress that has been made, and I would move that the President notify the public.

The President—The public will be notified through the journals of this afternoon and to-morrow morning. We will see that that is attended to.

On motion the convention adjourned until July 31st, at ten o'clock A. M.

THIRD DAY.

CINCINNATI, July 31st.—*Morning Session.*

The President called the convention to order at 10:45 A. M.

The President—While we are waiting, there is a matter that Mr. J. H. Nugent, of Chillicothe, would like to bring up in regard to the death of Mr. F. A. Simonds, of Chillicothe.

Mr. Nugent was called to the stage, and delivered the following eulogy:

Mr. President, and members of the Photographic Association of America: The task allot ted to me is rather a painful one; to announce the death of one of your worthy members, F. A. Simonds, of Chillicothe, who died Sunday morning, the 13th inst. The cause of his death was enlargement of the liver and inflammation of the bowels. He was confined to his bed only one week. Towards the last his sufferings were very acute, and death was a grateful relief.

Mr. Simonds was born in Winchester, Mass., in 1828; he located in Chillicothe in 1858, and has resided there ever since, pursuing photography as a livelihood. His excellence in his profession as a photographer was acknowledged by all. He was never married, neither was he a member of any church, but he attended divine service regularly. He was honest, upright and just in all his dealings, having known him for twenty-four years. By his strict attention to business he had become a man of some means. He has left behind as good a gallery as there is in Ohio. It is in one of the apartments where the spirit parted from the body.

Mr. Simonds was strictly a temperate man; he was opposed to Sunday work, and thought there should be one day in seven for rest. Mr. Simonds and myself carried on business in the same city for about twenty years. We never tried to injure or mar the feelings of each other. We were friends, and so parted. There was no man more devoted to his business, no man studied harder to reach the top of the photographic ladder than Mr. Simonds. He was looking toward the meeting of the photographic convention only a few days before he was taken down. He said: "I expect that the convention to be held at Cincinnati on the 29th will be full of instruction, a large attendance and the finest work ever exhibited." On the walls of his rooms he had the finest of work, regardless of cost. His charity extended to those in need, and his donations were large and generous. Brother Simonds has gone to attend the convention above, while we are permitted to-day to attend the photographic convention here. The photographic art has lost a friend, the community in which he lived a good citizen, and the Photographic Association of America a good member.

The President—At the time Mr. Gentilé gave his excellent report on the "Progress of Photography" I mentioned to you I had received a communication from J. Traill Taylor that he had also sent a report; that report came last night, and proves to be a very excellent resumé of the progress of photography in the last year. I regret that it came too late to be read in open convention. It is quite lengthy, and will consume a good deal of time, so it will be proper that the matter be brought up and acted upon this morning as to its being placed on file for publication. We also received a letter with the report, which the Secretary will read.

The Secretary then read the following letter:

WOODGREEN, LONDON, ENGLAND, July 19, 1884.

Leo Weingartner, Secretary of the P. A. of A:

MY DEAR SIR—Herewith please find my report on progress for convention. Afraid that my handwriting might not be very clear for your reading, I got my friend, Henry Greenwood, the proprietor and publisher of the *British Journal of Photography*, to set the report in type. Although compelled to be absent this year from the convention in physique I am with you in spirit, and accord you my best wishes for present and future success.

Faithfully yours,
J. TRAILL TAYLOR.

P. S.—My friend, A. L Henderson, a clever London photographer, is at present in the States and may probably visit Cincinnati during the convention. If he does, "be down" on him for a talk on experimental photography in London. He is always in the thick of it here, and can give much valuable information. Not only so, but he invariably imparts such information cheerfully. J. T. T.

The President—Gentlemen, what will we do with Mr. Taylor's report—what is your desire?

A Member—I move that it be placed on file for publication, and that a vote of thanks of the association be extended to Mr. Taylor.

The motion was seconded and carried unanimously.

The President—This gavel which I am using has quite a history, and in connection with it I will read the following letter, received this morning from Mr. T. H. Blair.

The President then read the following letter:

CINCINNATI, July 29, 1884.

J. H. Kent, President of the Photographers' Association of America:

DEAR SIR—I take pleasure in presenting to you, as President of this assembled body, a parliamentary instrument of order, and in as few words as are consistent say that though our city in the Far East may be but slightly represented, it is my conviction that in heart the craft is with you.

This gavel is made from a portion of the famous "Washington Elm," which for so long a time occupied a well-guarded position on our Boston Common.

It is presented with sincere wishes for the prosperity and longevity of this association, and in case of a disbandment the gavel is to become the property of the giver.

Yours very truly,
T. H. BLAIR.

The President—On the part of this association I will tender the thanks of the society to Mr. Blair. There is another matter here that may be presented at this time in relation to the admission of the public to this building. I saw General Goshorn this morning and he kindly consented to remove the doorkeeper and allow the public access to the building, including the art museum. The resolution is here offered that a vote of thanks be tendered General Goshorn in consideration of his great liberality in opening this building to the public.

A motion to the effect was seconded and carried.

Mr. Hesler, of Chicago—I want to call the attention of this association and the members here assembled to the postal law in reference to the carriage of photographs in which photography is put at the foot in the estimation of postal authorities. I have here a copy of the ruling of the third Postmaster General of the United States, which I beg leave to read. Leave was granted, and he read as follows:

THIRD-CLASS.

Mailable matter of the third-class embraces books, newspapers, periodicals, circulars, proof sheets and corrected proof sheets, and all matter of the same general character which is designed to instruct, amuse and cultivate the mind or taste. Postage one cent for two oz. or a fraction thereof.

FOURTH-CLASS.

Mailable matter of the fourth-class embraces labels, patterns, photographs, playing cards, address tags, paper sacks, wrapping paper, blotting pads, bill heads, letter heads, envelopes with printed addresses thereon, and all other matter of the same general character which is not designed to instruct, amuse, cultivate the mind or taste or impart general imformation. This class includes also merchandise and samples of merchandise, ores, minerals and seeds. Postage one cent per oz., or fraction of an oz.

Mr. Hesler—This class also includes fourth-class merchandise, samples of merchandise, ores, minerals, seeds, etc. You see photographs are placed in the same category as paper bags, etc., and are of no use to instruct, amuse or impart general information, or at least such is thought by the postoffice authorities. I think this classification of photographs is an insult to photography and every man engaged in it. I do not mean so much the postage as the insult placed on the art, and I think this association should take action in the matter and memorialize the postal authorities to enlighten them that there is some amusement and elevation in photography.

Mr. Overpeck, of Hamilton—I have a resolution to offer on this matter as follows:

Resolved, That the recent ruling of the honorable Postmaster General of the United States of America, by which photographs were placed as fourth-class matter, be and is hereby declared by the Photographers' Association as unjust and against the business interests of the photographers as well as the merchants and manufacturers of the union.

Resolved, That this body respectfully ask the honorable Postmaster General to reconsider said ruling and that the secretary of the association be instructed to forward a copy of these resolutions to the honorable Postmaster General of the United States.

Mr. Overpeck—I also offer that the secretary of this association be instructed to send a copy of these resolutions to the Postmaster General. A motion to that effect was seconded.

Mr. Wilson—I would amend the motion. You will find that when you take the Postmaster General to task you have to fight your case, and these resolutions won't work. A committee should have more than the power to present these resolutions. The Postmaster General has reasons and good ones for making this change in the postal rates. I have tried to get him to bring them back. I make an amendment to this resolution, to the effect that the committee have power to do what is necessary to work about the result we desire, and not merely present resolutions.

Mr. Klauber—The gentleman presenting this resolution did not make any motion to appoint a committee. His resolution reads that the secretary shall communicate with the Postmaster General. Will some one make a motion to appoint a committee and refer these resolutions to it or will the secretary attend to the matter? You have no motion before you to appoint a committee.

The President—Was it intended that that shall come in the form of a resolution?

Mr. Klauber—Will any one make a motion to that effect?

Mr. Wilson—I make the motion.

Mr. Klauber—I do not want to make all the motions of this convention myself. I move that Messrs. Hesler and Overpeck shall be a committee of two to correspond with the Postmaster General about this mail matter. I think that will settle it.

A Member—I move that the secretary be appointed chairman of that committee.

Mr. Klauber—I accept that amendment.

A Member—I suggest that Mr. Wilson's name be added to the committee.

The President—A very good suggestion.

A Member—I would suggest that the President be also added.

The President—The committee would then be too cumbersome.

Mr. Overpeck—I would like to withdraw in favor of Mr. Wilson from that committee.

Mr. Klauber—Then make it Mr. Hesler, Wilson and the secretary of the association.

The President—You have heard the motion. Is it seconded? All in favor of it say aye.

It was carried.

The President—Messrs. Hesler, Wilson and the secretary of this association are appointed a committee to present this matter to the Postmaster General. While we are waiting Mr. Wilson will read a telegram he has received.

Mr. Wilson read the following telegram:

New Orleans, July 30, 1884.

E. L. Wilson, Cincinnati:

Please extend invitation to National Photographic Association to hold next meeting and exhibition here at our exposition. Signed,

E. O. Burke,
Director General World's Exposition.

Mr. Wilson—I cannot imagine that any one here is ignorant of the fact that a world's fair is to be held at New Orleans commencing in December and ending in May. I have in my hand a telegram from the director general of that great exposition which has just been read. Of course if action is taken on this matter favorably our next meeting would have to be between December and June next, as early as we choose; but whether or not it is expedient to go there, I am not willing to say; but I have here a resolution I would like to read in connection with this matter.

Resolved, That this association accept with thanks the kind invitation of Director General Burke, of the World's Exposition, and that the committee named below be appointed with power for the purpose of securing a national representation of photography at the New Orleans Exposition. Edward L. Wilson, Philadelphia; J. F. Ryder, Cleveland; T. M. Wilcox, New York; F. W. Guerin, St. Louis; James Landy, Cincinnati; James Mullin, Lexington; S. F. Blessing, New Orleans; S. H. Harper, Brooklyn, with power to add to their committee if necessary to do the work.

The President—You have heard the resolution. Is it seconded? Well, gentlemen, have you any remarks?

The motion was carried.

The President—The next matter that properly comes up is the matter of the amendment to our constitution. At the time of the appointment of the committee yesterday it did not occur to me that there had been a committee appointed; that matter should come up this morning. It seems to me that the most expeditious way to get along with it is to have this presented and referred to the committee to be incorporated in the report of the other committee; in that way the whole matter would be acted upon at the meeting this P. M.

Mr. Carlisle—What then would become of the action of the prior committee? They have done their duty, therefore I call for action to be taken on the report of the committee of day before yesterday which should have been acted upon yesterday.

The President—That is what we proposed; it was an oversight, and it did not occur to me; it properly comes up at this time and with the permission of the maker of that amendment it will be incorporated into the report of the committee and that will expedite the business. I think we are all agreed that an amendment is necessary and that some change in the various portions of the constitution are necessary; but it cannot be as expeditiously disposed of in any other way; we are losing too much time over it.

Mr. Klauber—I wish to ask Mr. Banks to come up here, and that the resolution presented to the committee be voted on by this convention and then adopted if it sees fit.

Mr. Banks—The amendment to the constitution is already in the hands of the secretary, and it is his business to read it to this convention at this time.

Mr. Klauber—I make an explanation of this matter. The committee were handed some papers and thought, of course, as it is done everywhere, that whenever a resolution was handed in the presiding officer refers it to the proper committee on by-laws. Your committee on the constitution and by-laws took up that resolution which said that the initiation fee for employes should be three dollars; they embodied that resolution in their report. Mr. Banks who was notified to act as secretary of that committee did not think it was necessary to bring that resolution here. The fault seems to be that the resolution was not acted upon yesterday, and because of that there seems to be some feeling; I do not think there should be any. I move that the resolution be read and passed. I have no feeling in the matter.

The President—I do not understand that there is or need be any feeling in regard to this matter. These two resolutions are exactly alike and we propose now to have the former resolution voted upon, the one that should have been presented yesterday. That matter may be brought up at this time unless there is some objection to it. We will now proceed to vote on the resolution.

A Member—I move that the resolution be again read.

A Member—I move that this matter be laid over until the afternoon session, and that we now adjourn.

A Member—Mr. Klauber made a motion that a committee on by-laws be appointed. The resolution before the house is a resolution to amend the constitution.

The President—I understand the reporter has got the question down and can read it.

The reporter here read the proposed amendment.

Mr. Wilson—I move that this amendment just read by our reporter be referred to our committee on amendment to the constitution.

The motion was seconded.

Mr. Klauber—I offer as a substitute.

Mr. Carlisle—I call the gentlemen to order; there is a motion before the house and has been seconded. Mr. Wilson's motion is properly before the house and seconded.

Mr. Klauber—Mr. President, if the motion is properly before the house I have a full right to offer an amendment or a substitute.

Mr. Carlisle—I claim it has not yet been stated.

The President—The motion is before the house and may properly be amended at this time.

Mr. Klauber—Now, Mr. President, to settle this matter I offer this report of the committee as a substitute for the resolution now before you. I will withdraw my substitute.

The President—Gentlemen, you have heard the original motion; the substitution is withdrawn.

The question is called for.

Mr. Wilson—My motion was that the resolution just read by our short-hand reporter be referred to the committee on amending the constitution; that disposes of Mr. Carlisle's motion satisfactorily; and next comes our report which will embody the same thing.

Mr. Bellsmith—What I wanted was to save time and get the thing in proper shape, so I move to refer it to the committee on the amendment of by-laws.

The President—You have heard the resolution. Are there any further remarks?

It was carried unanimously.

Mr. Carlisle—Mr. President, are the resolutions not to be read this morning? They must be read in this session to be acted upon in the next.

The President—Let them be read.

The report of the committee was then read.

A Member—I believe that the employes under the amendment to the constitution and by-laws just read are required to pay as initiation fees three dollars and as their annual dues one dollar. I would amend that, making it read that the initiation fee of an employe be two dollars.

The President—I do not understand that this matter is open for discussion at this time; it properly lays over for one meeting to be called up again this afternoon when it can be discussed. The constitution provides that any amendment shall lie over one meeting. The next business in order is the election of officers.

Mr. Weingartner—A gentleman of the Toledo

Moulding Co. has lost a pocket-book containing eighty dollars. Anybody finding that will please bring it forward and give it to him.

The President—Here is a matter that has just been handed in; it is a matter that all can take a part in if they choose, asking that the president announce that Mr. Crowell, of Rochester, Minn., desires to take a large picture of this convention before the building at 3 o'clock; all that want their picture taken will present themselves at this time. The session this afternoon will be at 2:30. There was an announcement that Mr. Seavey was to make some exhibition of posing that will be deferred until 4 o'clock to accommodate the meeting. Before proceeding to the election of officers I wish to appoint a committee on the Progress of Photography. I name on that committee Messrs. Wilson, Gentilé and Carbutt. We will proceed to the election of officers.

Mr. Klauber—I offer as a motion that in addition to any name that has been proposed by the committee on nomination, names may be presented by this assembly and voted for. For instance, a president has been nominated by the committee, let the convention have the right to nominate anybody else that they choose. It has been done so before.

The President—Are the committee on nominations ready to report?

Mr. Weingartner—The committee on nomination offer the following names for the ensuing year: President, James Landy; Permanent Secretary, W. H. Potter; Treasurer, G. H. Carlisle; Executive Committee, Joshua Smith and W. A. Armstrong, and recommend as the next place of meeting, Buffalo, N. Y. For Local Secretary, H. McMichael.

The President—You have heard the report of this committee?

Mr. Klauber—I move that the report of the committee be received.

Seconded and carried.

Mr. Klauber—I move that other nominations are now in order.

Seconded and carried.

The President—The President will be first voted for.

Mr. Banks—I rise, sir, to present the name of a man not very old in years, perhaps, but who has won great distinction in our art within the last few years. He is a gentleman in every way capable to fill the position worthily; high toned, genial and capable. He is a gentleman also who has won great distinction in this great convention and the conventions for several years past. I think he has never failed to attend a meeting of this association. He is a gentleman, a progressive photographer. I think he will reflect credit upon the association; a gentleman of whom we all can feel proud. I present the name of Mr. F. W. Guerin, of St. Louis.

The President—Mr. Guerin is presented as a candidate. Are there any other candidates?

A Member—My friend, Mr. Guerin, wishes me to state that he cannot, and does not wish to, accept the office.

The President—Mr. Guerin wishes the gentleman to announce that he cannot and will not take the office of President.

Mr. Banks—I should have stated that Mr. Guerin is a very modest man. Mr. Guerin, I have no doubt, would serve to the best of his ability, if elected. No man would feel justified in declining a position of that kind conferred upon him by a majority of the members of an association like this.

The President—Mr. Guerin is nominated. Are there any other names?

A Member—I desire to nominate Mr. E. Klauber, of Louisville, as President of this association.

Mr. Klauber—I hope the gentleman from Tennessee will withdraw my name. I am too young and I have got too short hair on my head to accept the position of president of the association. May be in ten years from now I may accept it.

The President—Mr. Klauber asks the gentleman to withdraw his name.

A Member—I will not withdraw his name.

The President—Mr. Klauber's name is not withdrawn, and he stands as a candidate.

A Member—I nominate Mr. R. E. Lewis, of Springfield.

A Member—I nominate Mr. Ryder, of Cleveland.

The President—If the candidates are all nominated we will proceed to ballot.

A ballot was then taken with the following result. Guerin, 83; Landy, 72; Klauber, 31; scattering, 5.

It was then moved and seconded that the one receiving the lowest number of votes be dropped. Carried.

There being no election, a new ballot was ordered to be taken. It resulted as follows: Landy, 85; Guerin, 53 Klauber, 20. It was then moved and seconded that the election of Mr. James Landy be made unanimous. Carried.

Mr. G. H. Carlisle, of Providence, was elected Treasurer without opposition.

W. H. Potter, of Indianapolis, and Leo. Weingartner, of Cincinnati, were nominated for Secretary. Mr. Weingartner was elected, receiving 65 votes to Mr. Potter's 39. By a vote of the convention Mr. Weingartner's election was made unanimous

Joshua Smith and W. A. Armstrong were nominated for executive committee. It was moved and seconded and carried that the secretary cast the vote of the convention for those gentlemen as Executive Committeemen.

Mr. Carlisle moved that the election of Vice-President be laid over until the afternoon. Seconded and carried.

On motion the convention adjourned until 2:30 of this day.

THIRD DAY.

Cincinnati, July 31.—*Afternoon Session.*

The convention was called to order at 2:40 p. m.

The President—The first business in order is the amendment to the constitution; it will properly be taken up section by section.

The secretary then read the proposed amendments to the constitution as follows:

To the Officers and Members of the P. A. of A.

GENTLEMEN: Your committee, to whom was referred the revision of the constitution and by-laws, beg leave to submit for your consideration the following changes:

Strike out all of sections 2, 3 and 4, article 2, of the constitution, and insert in lieu thereof the following:

SECTION 2. Any person who is eligible may become a member of this society by making application to the secretary and paying an initiation fee of three dollars and one year's dues of two dollars in advance.

SECTION 3. The annual dues shall be two dollars for a proprietor, and one dollar for an employe; and no one shall be considered a member until he has paid this amount to the proper officer above provided. Any member may be expelled for improper conduct by a two-thirds vote of the members present at any annual meeting.

SECTION 4. The annual dues become payable on the first day of January in each year, and any member failing to pay the same prior to the adjournment of the annual meeting shall forfeit his right to membership, and can only be reinstated on payment of an initiation fee, as provided in the case of admission of new members.

We also strike out all of sections 1 and 2, article 3, and substitute the following:

SECTION 1. The officers shall be a president, two vice-presidents, a recording secretary and a treasurer, who shall be elected annually, and shall hold office until their successors are elected and installed.

SECTION 2. The president shall preside at all meetings and administer the rules of order usual in deliberative bodies; he shall nominate all special committees, unless otherwise directed; he shall countersign all orders on the treasurer, and shall also annually appoint a local secretary, subject to the approval of the executive committee, for the place where the annual meeting is to be held.

We strike out all of section 5, article 3, after the words, "The treasurer shall," in line 13 of said section, and add the following, so as to read, "The treasurer shall be required to give an indemnity bond that shall be deemed sufficient and satisfactory to the members of the executive committee, and said bond shall remain in the custody of the president of the society.

All of which is respectfully submitted.

E. KLAUBER,
T. W. BANKS,
H. S. BELLSMITH.

A Member—I move the adoption of the sections.

A Member—Will the secretary please read the whole constitution.

The constitution was then read.

Mr. Blunt—I think if you charge five dollars you will not get an increased membership, but will lose thereby. This is my view of it; I would suggest that the fees be three dollars without any initiation fee. We have gone to work, and from a very little crowd have grown until we are now a great society, and I don't believe in spoiling the work which it has taken so long to build up. I believe in letting well enough alone. What we want is more members—it is not the amount of money each member pays; all we want is money enough to run the concern. I believe in getting more members for less money. I think the amount proposed will rule them out so that none will come in.

Mr. Bellsmith—As a member of that committee I desire to explain that there was no thought of increasing the expense to those who are already members; but the effort is made for the purpose of retaining those who are members now as permanent members; by fixing the initiation fee at three dollars it will prevent a great army from slipping out of the association next year, who will not come to the convention. We want to induce them to pay whether they come or not. We want to reduce expenses; it is to insure a regular income in the case of a member dropping out because of a failure to pay annual dues. If he drops out, the following year he will have to pay two dollars in order to become a member, but I think if the fee were one dollar he would send in his next year's dues whether he comes or not.

A Member—I don't think there can be any question of it.

The motion was then put to vote and carried by a large majority, to adopt the first amendment to the constitution.

The President—The secretary will now read the next amendment.

The secretary read the amendment, and being put to vote, it was carried unanimously.

A Member—Mr. President, what do we understand by the name of an employe.

The President—Any one not a proprietor is an employe.

A Member—Why would it not be a good idea to give them the initiation fee, and make it free as regards employes; it would be a splendid thing for the association.

The President—That is a good idea, I approve of it.

Mr. Bellsmith—I will propose as an amendment that a clause be inserted in that article making the initiation fee for employes two dollars; the resolution at present reads, the initiation fee for a proprietor is three dollars, and of course it is taken for granted that an employe is to pay the same amount. I understand Mr. Smith in his remark intimated that he thought if there was a difference in the annual dues between a proprietor and an employe there ought to be a difference in the amount of the initiation fees; and therefore, I move, as an amendment, that the initiation fees for employes shall be made two dollars in place of three.

A Member—I second the motion.

The President—The resolution before the house, and seconded, is that the initiation fee of employes shall be two dollars instead of three.

It is proposed as an amendment, and that is the question now to be discussed.

Mr. J. Smith—My idea of it would be this: Take the employe and let him pay two dollars initiation fee, and exempt him from the first year's dues, then he would be a member; he would pay the sum of two dollars for initiation and would be free from dues the first year. It would be a help to him.

A Member—Do I understand that we can move an amendment to the question after it has passed? I understand that it is proper.

The President—I never so ruled, but there seems to be some opposition to reconsidering the motion. A proper way, I suppose, would have been for some one voting in favor of the resolution, to move its reconsideration.

A Member—Then I would move, as an amendment, that we reconsider the section just passed.

A Member—I second the motion.

Mr. Carlisle—I would like to say this in regard to this matter of employer and employe: I believe that while the employer attends this convention his business goes on at home, and there is money made to pay his expenses while here; whereas the young man who attends this convention as an employe, loses his time at home invariably, and is put to the same expense the others are; now are there not enough gentlemen here who are sufficiently interested in this organization to consider fairly this proposed decrease in the initiation fee to boys or an employe? There are many young men—you want to get them interested; they do not earn large salaries, and I would like to see them come in without any cost of initiation and pay one dollar per year.

Mr. Kent—I think the question before the house is on the amendment to reconsider the previous vote; those in favor of reconsidering this amendment will say aye.

The motion was carried.

Mr. Carlisle—I move that the committee which is in charge of the amendments to the constitution make such alterations as conform to what appears to be the desire of this organization, and to insert therein the privileges for the employe we have just asked for.

The motion is seconded.

Mr. Bellsmith, of Trenton—I think it is rather dark as to what the desires of the association are on this question. I am an employe at this time, though I have been an employer and proprietor of a gallery, and I calculate to be capable of earning a sufficient salary to leave my business and come to this convention and stay a week, and pay all my expenses, including initiation fee. I think there are a great many employes who are better off than their employers, and I don't see why we make this distinction; we want men; we have plenty of men who are employed at a salary of so much per week, and they have only the benefits of this association while they pay for them; I don't see why a distinction of such a kind should be made; if a man has brains, he is capable of earning a good salary, he is capable of paying his dues as well as the employer. I am opposed to this distinction, Mr. President.

Mr. Ernesti—I would just like to ask the gentleman who has just spoken, if he has always been able to make this magnificent salary, if he has been in former years as able to pay out his money as he is now?

The President—These remarks are personal, and are entirely out of order.

Mr. Carlisle—I rise to a point of order. There has been a motion made and seconded, and it should not be discussed until the chair states it. My motion was to the effect that the committee be called upon to come to the stage, and so make the amendment to the constitution that it will conform to the desires of this organization; or, in other words, that the resolutions be turned back to the committee having them in charge. It will only take them three minutes. I move that the resolution be referred back to the committee.

The motion was carried.

The President—Do I understand that it makes it one dollar or two dollars for initiation fee? I suggest to make it two dollars.

A Member—I understand that it is the wish of this association that employes shall not pay anything in the way of initiation fee, but simply one dollar as annual dues.

The President—The resolution is that they shall be required to pay two dollars without any annual dues for membership.

Mr. Carlisle—The prime difference between these, as they now stand, and as they previously stood, is that there is no forfeiture to the employe; that is, if he withdraws for a year or two, he can return without having to pay any forfeiture; whereas before if he was out two years and desired to return, he would have to pay four dollars: to my understanding that is the prime and only difference.

The amendment to the constitution referred to was carried unanimously.

(*To be continued.*)

Meetings of Societies.

THE SOCIETY OF AMATEUR PHOTOGRAPHERS OF NEW YORK.

The regular meeting of this society was held on the evening of August 12, 1884, at their rooms, 1262 Broadway. The president in the chair.

Several communications were read, among which were letters from the Philadelphia Amateur Club and H. D. Garrison, president of the Chicago Amateur Photographers' Club, relative to the organization of a National Association of Amateur Photographers. Mr. Garrison suggested that a new photographic section be added to the American Association of Science, which meets annually, in lieu of the proposed national organization. The president thought well of Mr. Garrison's suggestion, and stated, as communications had been addressed to other clubs on this subject, it would be advisable to postpone further action until they were heard from.

On motion of Dr. John Janeway, the reading of the minutes of the last meeting was dispensed with.

The following gentlemen were then elected as active members: J. V. Black, Wm. N. Stebbins, Philip J. Murray and Frank G. Du Bois.

The president stated that he had received from Thos. Bolas, editor of the *Photographic News*, some specimens of luminous paper prepared with a patented paint. A few minutes' exposure to either day or lamp light, was sufficient to render the paper quite luminous in the dark. One of its uses, when printed in the form of placards, was to notify persons of dangerous places at night. He brought a few specimens for distribution among members.

He also acknowledged the receipt of a package of pamphlets from the "Rochester Optical Company," entitled "The Amateur Photographer," sent for distribution among members; also two books for the society's library, contributed very kindly by the Scovill Manufacturing Company, entitled, "Chemical Effect of the Spectrum," by Dr. Eder, and "Picture Making by Photography," by Mr. H. P. Robinson.

He stated that since the last meeting he had had a call from Mr. A. L. Henderson, member of the London and Provincial Photographic Association, and had invited him to attend the next meeting on September 9, and give before the society a practical demonstration of his method of making cold gelatine emulsions. Mr. Henderson had promised to be present, and it was hoped there would be a large attendance, as the experiments would doubtless prove to be very interesting.

Mr. Henderson had given him a formula used by a Mr. Crosby, for making a gelatino chloride of silver emulsion well adapted for opal work. They would find it published in Anthony's Bulletin for July.

Mr. McMahan showed three unmounted silver prints of the great fire occurring at midnight, which recently destroyed the Pennsylvania depot at Jersey city. The camera was located two miles from the scene, and the exposure was thirty-five minutes. Several buildings and towers in the distance were well brought out, and above the glare of the fire could be seen the light of the electric lamps upon the East River Bridge, four miles distant. The pictures were interesting, as they showed the effect of a fire at night on a sensitive plate.

Mr. Beach then exhibited a negative made by him on August 8, on an Inglis plate, by moonlight, with a Morrison B Rapid Copying lens, stopped down to $\frac{1}{4}$ inch opening. The exposure was $6\frac{1}{2}$ hours, from 8.30 P. M. to 3 A. M, the moon being somewhat hazy. Although he had employed the potash developer, and used a large amount of pyro and a good proportion of bromide, he was unable to obtain enough density. He stated that there was sufficient detail in the negative, and that Mr. Newton would shortly strengthen it with his mercury intensifier to illustrate its capabilities. A negative was also shown by Mr. Beach which was too dense, and he would shortly undertake to reduce the same by an improved formula which had been recommended to him.

Mr. Thos. Ludlow brought two prints, one an ice-cutting scene, another of a child and goat; both were commendable for the softness of the high lights; the ice picture was particularly good.

Mr. Canfield then exhibited an improved drop shutter styled "The Phantom Shutter," manufactured by Walmsley & Co., of Philadelphia. The shutter was patterned after one of an English make, and its essential feature consisted in the combination with the drop of a moving skyshade. As the drop descends, the sky shade, for a brief interval, projects over the opening, and then suddenly flies up, thereby allowing the foreground to have a full exposure. The movement of the drop may be accelerated by elastic bands. A particular catch or spring permits the drop to be held open, so that the sky shade may be used on a time exposure, independent of the drop. The slide of the shutter was made of vulcanized rubber, and the article itself presented a very attractive appearance.

The president spoke of a projected field excursion to Mauch Chunk, Pennsylvania. He had been informed by Mr. Partridge that the expenses would be light, and the scenery afforded an excellent opportunity for photographing.

Mr. Newton was then called upon for a few remarks, relative to the keeping qualities of gelatine plates, in connection with the present mode of packing them, and spoke substantially as follows:

"I have had specimens from almost every maker in the United States and some of foreign make. Some of them are from one to two years old and even older, so that I think I am pretty well qualified to determine whether plates two years old or one year old are as good as those from three to six months old, as put up in packages in which they are sold.

Some fifteen or eighteen months ago I received specimens of plates from one maker who was making very good plates, but after I had kept them for a few months they began to show decided marks of change. The plates were packed in a cardboard box with a strawboard paper frame between each plate.

Where the frame came in immediate contact with the film its effect was distinctly shown and its damaging action on the film in radiating inward from the point of contact toward the center of the plate could also be seen. The plate was thus injured to such an extent that eventually it was impossible to make a passable negative.

I took some of these frames out of the box and went through a very careful examination of them; and I found them completely loaded with hyposulphite of soda.

Now I do not believe that any plates as sensitive as the gelatine plates are can be confined in an air tight box in such close proximity to a substance so potent in its deleterious effects as hypo-sulphite of soda without serious injury. That this is so I have demonstrated to my own entire satisfaction.

I wrote to the manufacturers of these plates and explained the experiments I had made and advised them to test also. In a few weeks they replied they had made experiments but had failed to find the hypo. That statement made no impression on my mind as it did not change the fact that I did find hypo. Not long after that these manufacturers commenced to pack their plates by running a common white wrapping twine or cord alternately, at the ends, between each plate, and I believe this is their present method of packing.

Mr. Newton then exhibited two plates, made by these parties, one of which had been packed in a box in contact with a strawboard frame; the other, of the same make, about six months old, had been separated by a cord.

The fog around the edges of the first plate was plainly visible, in reality making a vignetted negative, the effect of the paper frame having penetrated inward beyond its border. On the second plate packed with a cord there was no such fog, and the negative was clear and brilliant throughout.

Regarding these exhibits Mr. Newton said, "you need to keep the two plates together in order to compare them. They fully illustrate what I wish to explain. It is a very difficult thing to put up a plate that will keep two years. There can be no question but that the action you notice on these plates came from the cardboard frames between them." He exhibited another plate which had the color of a rainbow around the edges; regarding it he remarked "you will observe that during development the silver has precipitated, in a metallic form in a rim about an inch wide around the edge of the plate.

I have another make that was put up in a grooved pasteboard box, where, during development a similar precipitation occurred over the entire surface, not evenly, but as a general thing all over the plate. These plates being in contact with nothing but the edges of the box and the grooves, still deteriorated rapidly, proving conclusively to my mind that the material of which the boxes were made was not suitable. It is very important for manufacturers to know beyond question whether their plates are going to keep. Time alone can determine that question in reference to the different methods of packing. The manufacturers of course do not keep them and they are used up generally in a short time by those who purchase them. But sometimes a man wants to go on an expedition—to South America or Egypt for instance—and he wants to take plates that will last two or three years; he wants to take plates along that he will be sure will not be worthless after a year's keeping.

The next plate shown, he said, was an excellent plate; they were separated in the package by tissue paper, but the defect he called attention to was where the edge of the plate came in contact with the paper box the edges were slightly effected at both ends. He thought the paste board box must have been full of hypo-sulphite of soda, or some other deleterious substance. Regarding another plate shown he said, "a year ago it was an excellent plate and made beautiful negatives. This one (handing it around) has a transparent frame around it and where the cardboard frame comes in contact it is insensitive. The action inside of the frame made the film unfit to make a passable negative. All of the plates seemed to have been effected clear through. I tried three or four and found it impossible to make a picture on them. As soon as the development begins to act, it acts all over. The specimens which I have brought illustrate plainly what I wish to show, namely, that it is uncertain about the keeping qualities of these plates for any length of time with the present methods of packing. I have seen them kept in a holder where they do not come in contact with anything, and make, after a long lapse of time, when used, beautiful negatives, which would indicate that the trouble is not inherent in the plate. Another manufacturer who had a great deal of trouble of this character with his plates tested the paper surrounding them and the paper frames; he found, as I had found, that they were full of hypo. He then substituted for the paper frame strips of white wood laid between the plates at each end. I think his plates are put up that way now."

Dr. John Janeway—They are not, as in a package which I recently obtained the plates were separated by strawboard frames shellaced or varnished over on each side.

Sheets of strawboard are shellaced or varnished over and then the frames are cut out with dies.

Mr. Newton—In that case there will be better protection but the hypo in the paper can emanate from the cut edges of the frame and affect the plates. The better way would be to varnish the frames after they are cut.

Referring to wood boxes he said, The old bath plate or collodion emulsion workers did have much faith in white wood boxes.

Plates kept in them would within a year show action from the edges toward the center which made them worthless. Therefore when I introduced the collodio-bromide plate that I made with my emulsion, I made a box of tin with corrugated ends, and a transparency made on one of those plates was exhibited by me last winter at the photo section of the American Institute, which had been kept, before exposure, between three and four years, in the tin box. It was as perfect as could be and could not have worked better had it been made the day before it was exposed."

Mr. Apgar—My experience with tin boxes for holding collodio-bromide plates has been that, in transportation on long journeys, if the plates fitted loosely in the grooves their edges would in consequence of the constant vibration, abrade against the tin and chip off fine particles of it and wherever these struck the film a pin hole would be made. A fine negative of a house and surroundings I made in the Adirondacks was ruined in this way.

Mr. Newton—Perhaps you omitted to brush the plates off before putting them in the holder.

Mr. Apgar—No sir, I used the usual care; wherever the particles of tin struck or touched the film they left their mark. Generally I was troubled very little with the chipping of the metal and carried many plates successfully. If the boxes are carefully handled there need be no danger. The plates were perfectly preserved; the metal had no effect upon them except as I have stated.

Mr. Newton—I wish to state just one thing more in connection with this matter of fog on plates. If I had not known that these plates were good a year ago and had taken one of them out and developed it and got the result which I have shown you, which was no result at all, I might have thought that the plates were light struck, that my light was too strong in the developing room. I think it is not quite certain now, when photographers are working plates which they have had a good while, that the effect spoken of is due to the fact that the plates were previously fogged. The plates which I have shown were developed with the formula I gave here two or three months ago.

The President—I have had the same experience with fog in plates which Mr. Newton has shown, and generally supposed such plates were light struck prior to their exposure in the camera. But Mr. Newton's explanation of the effect of the hypo in the paper on the plates is very good, and will doubtless explain a few mysteries some of us have encountered.

Mr. Newton—I have brought specimens of colored glasses which, as they are intended for dark room illumination, will doubtless interest you.

He then passed around a specimen of pot orange glass coated with an aniline green called "new green," dissolved in ordinary negative varnish. The colored varnish was flowed over the glass, and when dry formed in combination with the orange color of the glass a deep olive green which was quite non-actinic and made a very agreeable light to work by. The brilliancy of the color attracted much attention. Mr. Newton stated that a plain sheet of glass could be coated with an orange aniline color on one side and the "new green" upon the other, which would answer every purpose. The colors were very easily prepared and could be readily obtained. If a large amount of color was added to the varnish the film would be quite opaque. Any desired degree of transparency could be obtained.

Mr. Walker—I have recently experimented on the development of plates with an ordinary kerosene lamp provided with a chimney, without using a red light. I used it for two weeks and I had no difficulty with my plates whatever, and they were Eastman's special. The development was perfect. I much prefer this light to a red light; all I did was to smoke the lower portion of the chimney very little, leaving the upper portion clear. The ceiling of the room being made of boards caused no downward reflection of the light.

The President—This is interesting as showing what can be done in case of an emergency.

Mr. Newton, at the request of the president, then tried intensifying the thin moonlight negative brought by Mr. Beach, with his mercury intensifier. He remarked that the negative was unusually thin, but after a little manipulation he succeeded in bringing it up to good printing density.

The President then gave a formula for reducing over-intense negatives which had been recommended to him.

Two solutions are made as follows:

NO. 1.

Water.......................15 drams.
Chloride of gold.............15 grains.

NO. 2.

A weak solution of cyanide of potassium.
Water...................... 8 oz.
Cyanide of potassium..........10 grains.

The plate is soaked in water and then flowed over for half a minute with the gold solution; it is then washed and flowed with the cyanide solution. The action proceeds slowly and gradually, and is under perfect control. The gold solution converts the reduced silver in the high lights into a chloride which is dissolved out by the cyanide solution. If the reduction on the first trial is not sufficient, the operation may be repeated. Among the advantages are that details in the shadows are not obliterated, but the action is uniform, the high lights being reduced in due proportion.

Mr. Beach then successfully reduced a negative with this formula before the audience.

Some discussion then ensued relative to the expensiveness of the formula.

Mr. Newton gave two formulæ which in his hands worked very successfully and had the advantage of not being as expensive as the gold solution.

They were as follows:

Water.................. 10 oz.
Sulphate of copper.........100 grains.

After the copper is dissolved add

Bromide of potassium.......100 grains

which converts the solution into bromide of copper.

For use he adds one ounce of the above to two ounces of water. The plate is soaked in the solution for a minute or two, then washed and put into a weak solution of hypo for two or three minutes, and again washed. If the reduction is insufficient the manipulation may be repeated. The copper solution may be used over and over again.

The other solution was:

Water.......................1 oz.
Perchloride of iron solution as
obtained at the druggists'...½ a dram.

The plate is laid in this for two or three minutes, washed, put into a weak solution of hypo for the same length of time, washed, and set up to dry.

Dr. Janeway gave a formula for reducing negatives which he had used with much success as follows: Ferrid-cyanide of potassium (red prussiate of potash), nine grains, dissolved by stirring with a glass rod in three ounces of a 5 per cent solution of hyposulphite soda. This amount will cover a 5×8 plate, and it should be mixed on the day it is to be used. Its action is quick and careful watching is necessary. Portions of a dry negative that it is desired to reduce may be touched over with a camel's hair brush dipped in the solution. Care should be taken to wash off the plate after each application of the solution.

The president stated that a series of experiments in the development of plates would be undertaken in the dark-room; a recess was then taken and several gentlemen with the president entered the dark-room.

Messrs. Beach and Newton conducted the experiments, some six or eight plates being developed which had received varying exposures.

Upon the first, pyro preserved with formic acid, in combination with carbonate of soda was used; a yellow negative resulted. The developer oxidized very quickly.

Upon the next plate the same pyro solution combined with a carbonate of soda and sulphite of soda solution was employed. The developer kept clear and the negative possessed a clear grayish color. The next three plates were developed with the same pyro solution in connection with Mr. Newton's carbonate of soda, potash, and sulphite soda solution; clear bluish-gray colored negatives resulted.

The succeeding three plates were developed with pyro preserved with sulphurous acid, and a carbonate of potash and sulphite solution. Negatives of quick printing quality were produced, and the developer remained remarkably clear.

Mr. Beach explained his method of development to be the addition of small quantities of the alkali at a time until the image appears.

The experiments were instructive and interesting and at their close the meeting adjourned.

Chicago Amateur Photographer's Club.

The regular monthly meeting was held on Monday evening August 18th, Dr. H. D. Garrison, president, in the chair. The attendance was small, owing to hot weather and absence from town of many of the members. On motion, the reading of the minutes of last meeting was dispensed with.

There being no regular business before the meeting, and no subject for discussion, the conversation assumed a desultory character, Mr. Greene leading off with some remarks on the Cincinnati convention. He said it seemed to be the unanimous opinion that there was a big show of apparatus and pictures, but he was expressing the sentiments of the great majority who attended in saying that the sessions were a blank so far as the accomplishment of any useful work was concerned.

This was the first time in the history of the P. A. of A. that such a thing had happened. Still, he thought every one who attended felt amply repaid for the outlay of time and money, by the exhibition and the opportunity of meeting so many members of the craft, and having a good time generally.

Mr. Greene also spoke of the Cincinnati amateurs, and the excellent work they were doing, adding that some of their instantaneous work he should feel very proud to have produced himself; it was simply perfect. The Cincinnati Amateur Society, with great liberality, placed their dark-room facilities at the free disposal of visiting amateurs from other cities, and the secretary and himself had availed themselves of this privilege to change some plates.

(Mr. Greene in addition gave some description of the quarters occupied by this society, etc., but, as we have given substantially the same information on another page, we do not repeat it here.)

Mr. G. thought it would be a good idea for a committee of this club to select a few specimen prints, made by some of our members, and forward them to the secretary of the Cincinnati society (Mr. Carpenter) with a request to exchange. Mr. Carpenter, he said, used a very satisfactory arrangement for taking his own picture, either in a group or singly; it consisted simply in having an unusually long tube attached to his pneumatic shutter.

Mr. Tolman understood that the Chair had been present at Cincinnati, and thought the meeting would like to hear his views on the convention. The Chair replied that the last speaker had substantially expressed his own sentiments. The convention had certainly been a complete failure. He expected to hear the views of a great many persons on various photographic subjects, and that the minutes would be very interesting reading. As it turned out he thought no one would read the actual minutes if he could help it.

Some persons, he was aware, had an idea that emulsions and developers were old and worn out subjects. Perhaps so; then let us have something new, but do not spend all the time wrangling over what one of the officers called the "Pie-laws."

Mr. Greene: One word more. There had always been a good deal of kicking in the association about stock-dealers and dry-plate makers holding office. Now, this last convention was the first one which had been entirely run by photographers, not a dealer or plate-maker filled any office; and what was the result? Not a word said about photography.

The chair observed that the same spirit of jealousy seemed to run through the photographic fraternity that prevailed in the medical profession. At a medical convention, each "school" was afraid that a professor of some other school would be elected, and so give tha side an undue advantage; therefore they all unite on some stick with no decided views—and the less brains the better—and he gets elected. He thought that in electing officers for the P. A. o

A. the best men should be chosen, irrespective of whether they were photographers, stock-dealers, plate-makers or what.

Mr. Edgeworth: A good many people seem to be under the impression that the reason nothing was said about dry-plates at Cincinnati was, that some one at the head was interested in preventing it. Now I do not believe this is exactly so. The fact is the Eastern men are much closer than we are out West; they think no one knows anything but themselves, and are mortally afraid of "giving something away." Now at New York, Mr. F., a well known photographer of that city, was asked to get up and say something to the convention.

"What do you take me for?" was the reply. "Do you suppose I have been a quarter of a century learning what I know about photography to give it away to those Western ignoramuses?"

I replied, "Mr. F., there are men in that convention who have forgotten more about photography in a week than you have learned in the last twenty-five years."

One of the great troubles with the late convention was the president's nervousness. His sole thought seemed to be, "How can I get through this disagreable business in the least possible space of time?"

Mr. Gentilé: I think that is a mistake. I saw no signs of nervousness, but the presiding officer undoubtedly made many mistakes.

Mr. Greene: It is hardly fair to charge the failure on the president. The executive committee must shoulder the blame, and of course, the president has to take his share as a member of that committee. A programme for every meeting should have been laid out and printed, and papers and materials for discussion provided. This was not done, nor could he discover what the executive committee had done.

The Chair: I will relate an amusing incident that happened to me while in Cincinnati. I went into a gallery which shall be nameless, and asked the proprietor, among other questions, whether he was attending the convention. He replied, No. Did he read the Chicago photographic journals? Well, he did not subscribe, but he had read some copies that were sent to him. He spoke in a very disparaging way about "those d—n fool amateurs talking about light, etc." You may imagine that I left without making myself known. Now, this man had a dark (?) room about as safe to open a box of dry-plates in as this room; a big light covered with yellow paper—postoffice paper, I think. I did not see one of his negatives which was not badly fogged.

Prof. Hough asked Mr. Greene how it happened that, as a general thing, professional photographers don't know when they fog a plate?

Mr. Greene thought this rather too sweeping an assertion. He did not believe amateurs as a class could afford to crow over their professional brethren in this respect. There is undoubtedly a great deal of ignorance on the subject amongst both classes. Did not believe one man in ten knows how to develop a plate properly. They will take a negative out of the dish and hold it close to the light half a dozen times during development, and in this way it gets exposure enough to print a fully-exposed transparency. He would admit that he had himself, after working two years with dry-plates, fogged a great many without knowing what was the matter. He laid it to over-exposure, poor plates, in fact almost any cause but the right one. At last it occurred to him to test his light. This was covered with red tissue paper, and on experiment he found he could print a fully-timed transparency in about two minutes. The fact was, the paper had faded. By putting on an extra thickness of new paper of the same kind, he found that an exposure of ten minutes gave only a trace of an image, and this he considered safe with reasonable precautions. He developed with ferrous-oxalate, and kept a sufficient quantity in the dish to protect the plate from light, taking it out as little as possible.

Mr. Edgeworth: Most of the failures in working very rapid plates are due, so far as my observation goes, to the use of insufficient light in developing. So little light is used, for fear of fog, that the operator can't see what he is doing, and consequently can't tell when the development has been carried far enough.

A diffused light such as that transmitted by ground glass or paper, is much better and safer than that transmitted through plain glass. It has less effect on the plate, while it lights up the dark-room much better.

Prof. Hough: I believe it possible to develop the most sensitive dry-plate without fog. The most critical operation is taking the plate out of the box and putting it in the holder. I am inclined to think that many plates are fogged during this operation in galleries.

The Chair stated that he had tested the piece of "canary medium" given him by Mr. Henderson. He had only made one experiment, by comparing it with other media in the same manner that his investigations were carried out last winter, viz.: By placing a perforated tinplate between a gelatine plate and samples of single red glass, double red glass, green and orange glass, and canary medium, arranged alongside of one another. The result was, that through the green and orange he got a good fair spot, hardly a trace of an image through double red, and jet black through canary medium. So far, therefore, the latter did not give good satisfaction. He had not yet tried it for illumination.

Mr. Edgeworth remarked that Mr. Cox, in Milwaukee, used a light about 10×16 covered with this material, and it gave very good satisfaction. He (the speaker) was inclined to think that the difference in chemical constitution of different brands of plates makes a difference in their sensitiveness to various colors of light.

The Chair replied that a plate containing a good deal of iodide would undoubtedly be less sensitive to yellow than one containing only pure bromide.

Mr. Edgeworth said that his observation had led him to think that different brands of plates, although of almost identical rapidity under the skylight, varied greatly in their sensitiveness to certain parts of the spectrum. For instance, an

Eastman or Monroe dry-plate can be worked successfully in an orange light, while an Inglis or Cramer plate of the same rapidity cannot.

Mr. Tolman explained that by varying its chemical constitution, an emulsion might be made more or less sensitive to any particular part of the spectrum.

Prof. Hough: Would not red be the safest in any case?

Mr. Tolman: Not necessarily.

Mr. Greene: As this subject has come up, I would like to say a few words on it. In different makes of plates, and even between different emulsions of the same brand, there is a great difference as to the sensitiveness to the same color ray. For this reason I now see that Prof. Hough's sensitometer, from which I had expected a great deal is practically useless, because it only gives the sensitiveness to white light, *i. e.*, the high lights of a subject, and is no test for the sensitiveness to shadows.

As an illustration, I have here a print from a negative on a certain brand of plate. It had 6 seconds exposure, and that time was about right. Immediately before exposing this one, I gave another plate out of the same box 2 seconds on the same subject, and I also took a plate of another brand and gave that 2 seconds. This last plate was slow in showing any image in development, but gradually came up to a fully timed negative, full of detail in shadows, while the former showed the high lights very quickly, even in old developer, but no amount of forcing would bring out any detail in shadows. Now I contend that Prof. Hough's sensitometer would have registered both these plates as of about the same sensitiveness, yet one actually required 3 times the exposure of the other to get the same result.

Mr. Tolman: As an illustration of the different effects of colors on the eye and on a photographic plate, I may mention that once, in making a photograph of a lot of books on the shelves of a library, I noticed one book, the back of which was light blue, and set back in the shadow of the one next it so that to the eye it appeared black, and it was impossible to distinguish the lettering of the title. In the negative this book came up white, and the title was perfectly legible.

The Chair: Captain Abney has found that plates containing a good deal of iodide are very insensitive to yellow light.

Mr. Edgworth would like the experience of the members as to the relative quickness of action of weak and strong hypo solutions. His own experience had been, that when the solution was very strong it worked slowly, and the addition of a considerable quantity of water quickened its action very materially.

Mr. Greene said his experience was just the reverse; when his fixing bath did not work quick enough to suit him, he dumped in a handful of hypo and it went all right.

Mr. Edgeworth observed that it was the usual custom to take a strong developer for short exposures. His practice had taught him that a weak one, that is, a developer containing a large proportion of water, would bring out the details in an under-timed negative much better, without piling up the high-lights.

He differed from Mr. Greene as to the method of using the oxalate developer. The latter soaked his plates first in old developer, without reference to the exposure they had received; the speaker, on the other hand, would not treat even an overtimed negative in this way, but would start it with fresh strong developer and afterward build it up with old. In this way he made sure of getting his details in the shadows, while by the reverse proceeding the plate would get full of bromide, and no details could be got in shadows until the high lights had been carried altogether too far, and in many cases could not be obtained at all. He followed the same rule in pyro development, and might mention in illustration that at Cincinnati a man brought in two plates for development, one of which had received 2 seconds exposure, the other 20, and by mistake told him the latter was the 2 second one, yet he developed them both to good negatives.

He (Mr. Edgeworth) had heard several people speak of plates fixing in sulphite of soda.

The Chair thought this might be accounted for by the impurity of the sulphite, which probably contained some hyposulphite.

Mr. Edgeworth remarked that there was undoubtedly a good deal of difference between different samples of sulphite, and his firm had found that there were only two brands they could rely on, Malingkrodt's granular and P. & W. crystallized, using ⅓ more of the latter than of the former, to allow for water of crystallization.

Dr. Garrison preferred to use the crystallized salt, as being in his opinion more definite in composition.

Mr. Edgeworth replied that down South the crystals were troublesome on account of absorbing moisture and becoming liquified, and he preferred the granular form.

The Chair read a letter he had received from Mr. F. C. Beach, president of the New York Amateur Society, suggesting the formation of a national amateur association. He thought the idea a good one, and that probably the best way to carry it out would be to form a photographic section of the American Association for the Advancement of Science. It would be too late to do anything this year, because the meeting of the above association will open Sept. 3, in Philadelphia. But perhaps they could do something next year.

Prof. Hough endorsed the views of the last speaker.

The secretary read a letter from Mr. C. W. Canfield, secretary of the New York Amateur Society, offering the facilities of their dark-room etc., to any members of the club who might be visiting New York, and cordially hoping to see any of them who might be travelling that way.

The secretary also stated that he had received a copy of the constitution and by-laws of the New York society, and had sent a copy of the club's in exchange.

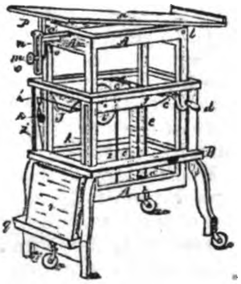
On motion a vote of thanks was passed to the New York Amateur Society for this very kind offer, and the secretary instructed to communicate the same.

The secretary also distributed a number of circulars relating to the Boston amateur exhibition, which he had received from the secretary of the Boston Amateur Society, together with a letter asking the club to contribute examples of work to that exhibition.

A vote of thanks having been passed to the Boston Amateur Society for its kind invitation, the club adjourned.

Patent Intelligence.

302,639.—PHOTOGRAPHIC-CAMERA STAND. James H. Smith, Quincy, Ill. Filed Aug. 20, 1883. (No model.)



Claim.—1. In a photographic-camera stand, the combination, with a main frame, B, and an inner vertically-moving frame, A, of the crank *d*, shaft *c*, cross-frame *g*, band *e*, and roller *d'*, and suitable means for locking together the frames A and B.

2. In a camera-stand, the combination, with the frames A B, of the posts K K on frame B, forming with the frame A the openings *i i*, the rod J, and wheels or cams *h h*, for the purposes herein described.

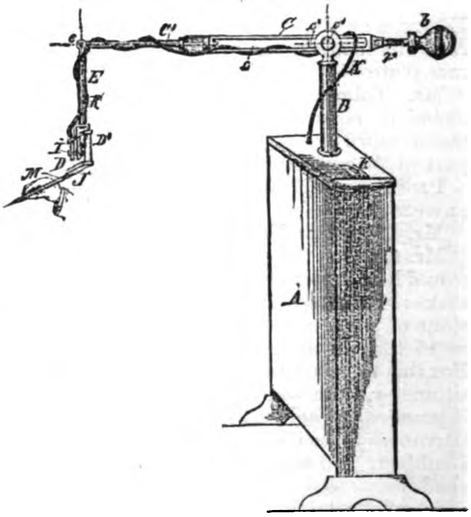
3. In a camera-stand, the combination with the frames A B, of the crank *d*, shaft *c*, belt *e*, and roller *d'*, and the locking device consisting of the posts K K, rod J, and wheels or cams *h h*, all arranged substantially as described.

4. In a camera-stand, a locking device consisting of the knob or wheel *m*, having the hollow threaded shank *m'*, screw-head *u*, block *v*, and screw *t*, in combination with the slotted pendant *n* and the support P, attached to the table, as described.

5. In combination with the frame of a camera-stand, the bolster K' journaled in said stand, the platform *a*, hinged support P, block *a'*, slotted pendant *n*, knob *m*, threaded hollow shank *m'*, washer *s*, screw t, guide-block *v*, screw-head *u*, perforated flange *o*, and pivot *p*, arranged substantially as described.

6. The herein-described photographic-camera stand, formed of a main frame, B, and inner frame, A, and having suitable rollers, a tray *g*, crank *d*, shaft *c*, cross-frame *g*, belt *e*, roller *d'*, posts K K, rod J, wheels *h h*, spring *b*, grooved-wheel *b'*, cord *z*, the bolster K', table *a*, hinged support P, block *a'*, slotted pendant *n*, knob *m*, hollow threaded shank *m'*, washer *s*, screw *t*, guide-block *v*, screw-head *u*, flange *o*, and pivot *p*, all arranged substantially as herein set forth.

302,836.—PHOTOGRAPHER'S ELECTRIC RETOUCHING DEVICE. Jean Francois Geesbergen and Alfred Geruzet, Brussels, Belgium. Filed Oct. 24, 1883. (No model.) Patented in Belgium July 28, 1883, No. 62,164; in France Sept. 19, 1883, No. 145,263; in England Sept. 24, 1883, No. 4,557; in Germany, Oct. 9, 1883, No. 27,091; in Italy, Oct. 24, 1883, 494/16,006, and in Austria-Hungary, Dec. 26, 1883, No. 37,177 and No. 53,504.



Claim.—1. A photographer's electric retouching device, composed of a pivoted support, an electro-magnet suspended therefrom, a pencil-holder flexibly connected with said electro-magnet, and suitable electrical conductors, substantially as described, for the purposes specified.

2. A photographer's electric retouching device, composed of a pivoted support, an electro-magnet suspended therefrom, and a pencil-holder flexibly connected with said electro-magnet, in combination with appliances for counter-balancing the weight of said parts on their support, and suitable electrical conductors, substantially as described, for the purposes specified.

3. A photographer's electric retouching device, composed of a pivoted support, an electro-magnet, a flexible connection pivoted to said support and magnet, a pencil-carrier, a flexible connection between said carrier and electro-magnet, and suitable electrical conductors, substantially as described, for the purposes specified.

4. A photographer's electric retouching device, composed of a pivoted support an electro-magnet, a flexible connection pivoted to said support and magnet, a pencil-carrier, a flexible connection between said carrier and the electro-magnet appliances to counter-balance the weight of the pencil-carrier, electro-magnet, and connections upon their pivoted support and suitable electrical conductors, as described, for the purposes specified.

5. The combination, with the pivoted support C, its counter-weight *b*, and the coiled spring E, of the frame D', carrying an electro-magnet, and a pencil-carrier or holder, said parts being connected for operation, substantially as described, for the purposes specified.

6. The combination, with the rod having a longitudinal slot, *c*, the sliding block c^2, provided with pivots *c'* and adapted for adjustment in said slot, the adjustable counter-weight *b*, and the standard B, of the coiled spring E, the frame D', carrying an electro-magnet, its armature G, spring *g*, and a pencil-holder or carrier, said parts being arranged for operation as described, for the purposes specified.

7. The combination, with the rod having a longitudinal slot, *c*, the sliding block c^2, provided with pivots *c'*, and adapted for adjustment in said slot, the adjustable counter-weight *b*, and the standard B, of the coiled spring E, the frame D', carrying an electro-magnet, its armature G *g*, and head J, the coiled spring L, and a pencil-holder M, said parts being arranged for co-operation, substantially as described, for the purposes specified.

8. The combination with the electro-magnet D and its spring armature G *g*, the frame D', head J, and spring L, of a pencil-holder, M, composed of an outer tube, a tubular carrier, P, inclosed therein, the adjustable collar O, rod R, spring Q, and binding-screw V, said parts being arranged for co-operation, substantially as described, for the purposes specified.

9. In a photographer's electric retouching device, the combination, with an electro-magnet and suitable electric conductors, of a pencil-holder connected with said electro-magnet and its armature to vibrate a pencil-carrier contained by said holder in a direction at right angles to its longitudinal axis, substantially as described, for the purposes specified.

PHOTOGRAPHY.

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In this number will be found the remainder of the minutes of the final session of the Cincinnati convention, which were crowded out of our last issue. We have given these minutes *in extenso*, not because we think them worth the paper they cover, but in order to enable those of our readers who were not present to judge whether or not our strictures on the conduct of that convention were justified by the facts.

In the *Photographic News* of August 29 we read as follows:

"A distinctive feature in all English photographic associations is the good feeling which exists between the two classes of members—professionals and amateurs. This is not quite the case in America. The amateur photographers of Chicago, for instance, want to start a new society, as they are not satisfied with the way in which the present one 'seems mixed up with the professionals.' On the other hand, the society of professionals is not pleased because it has become 'mixed up' with the amateurs. We should be inclined to think that the more they are 'mixed up' the better for both."

The wording of the foregoing paragraph leaves no doubt as to the source from which the editor's information was derived, viz., *The Eye*. So long as the statements therein contained were confined to the latter publication, we would have been content to pass them over in silence, but when we find them transferred to the editorial columns of a journal with the circulation and influence of the *Photographic News*, it is time to say something on the subject.

Having been connected with both the Chicago societies from their inception,—being amongst the original organizers of the Chicago Photographic Association—nearly fourteen years ago—and being, for some years thereafter, the only amateur in it, we think it will be admitted that we are in a position to speak with some authority as to the relations existing between the professional and amateur elements in these societies.

We believe, then, that nowhere, either in England or America, have these two elements worked together more harmoniously than in Chicago.

It must, of course, be recollected that it is only within a very few years, in fact, since gelatine plates became a commercial article, that we have had any considerable number of amateurs in this section of the country; but, few or many, they have always been cordially welcomed by the Chicago Photographic Association. This association is now frequently referred to, as in the quotation above, by way of distinction, as the "professional society;" but this is apt to mislead those unacquainted with its past history; as a matter of fact, its constitution speaks of it as "this association of persons *interested in photography*," and again provides that "any person *interested* in photography may become a member, etc." And this broad platform has been steadily adhered to, not only in the admission of members, but in the general conduct of the association's affairs.

Why, then, it may be asked, should an amateur club have been formed at all? The answer is simple: Most of the amateurs were beginners; they felt that the advanced questions which occupied a considerable share of the attention of the older society had no immediate interest for them. In the commercial aspects of photography they felt, of course, no interest whatever; those subjects, on the other hand, which specially concerned them as beginners could not be expected to have any attraction for the old stagers; and finally they felt a little diffident about exhibiting their humble efforts to the critical gaze of men who had grown gray in the business. But that they were actuated by no spirit of exclusiveness is manifest from the fact that they voted unanimously to admit professionals as honorary members, and have always welcomed them to their meetings. In fact, those who have read the printed reports of these amateur club meetings cannot have failed to observe that a very considerable proportion of the talking is done by professionals.

On the other hand, most of the more active members of the amateur club are pretty regular attendants at the meetings of the older association, and quite a number of them are members of it.

Now for the statement that "the amateurs of Chicago want to start a new society, as they are not satisfied with the way the present one seems mixed up with the professionals." The facts are these:

Our amateurs here in Chicago, as well as in several other American cities, may be broadly divided in two classes; the first comprising scientific and professional men, who employ photography as an adjunct or assistant in their regular pursuits; doing, perhaps, more or less "viewing" as an amusement pure and simple; while the second consists of those who follow the art-science for amusement only, and have almost without exception joined the ranks since the advent of commercial dry-plates and cheap outfits.

The latter class is composed principally of young people—some of them *very young*; while the majority of those included in the former, at least here in Chicago, are on the "shady side" of forty.

Now it will be at once evident, to any one who gives the matter any thought, that while these two classes have somewhat in common, their ideas and interests are even wider apart in other directions than are those of the amateurs, as a whole, and the professionals; yet they get along fairly well together.

To illustrate our meaning, let us take an extract from that choice specimen of literary skill, Tapley's "Amateur Photography." On page 119 we read: "It is usual in instruction books of this class to insert a prosy chapter on the photographing of microscopic subjects (?) in order to advertise a special apparatus. The subject is often of interest to scientists, but has no more to do with amateur photography, popularly speaking, than has the beautiful experiment of photographing the moon."

Now, what interest can there be in common between a man who is capable of writing the above lines and such men as Dr. Garrison, Prof. Hough, Dr. Mercer, Mr. Burnham, Prof. Bastin or Mr. Tolman?

Further than this, the gentlemen comprised under class No. 1, in the above division, have, most of them, dark-rooms and other facilities for working, either at their residences or places of business; but the young recruits forming the majority of the second class have no such facilities, as a general thing; and thus it happens that they may be desirous of organizing a club on the same basis as those in New York, Philadelphia and Cincinnati, in which the entrance fees and annual dues are fixed at figures sufficiently high to enable them to rent a good room in a central location, and fit it up with dark-room and other facilities for the comfortable and convenient prosecution of their experiments. This room would be open to the members at all times, and any of them casually "dropping in" would be very likely to find some of their acquaintances.

But with the old stagers the case is different; they have no need of such facilities, for the reason above mentioned; and they do not feel like going down into their pockets for the benefit of their less favored brethren; nor do they care about coming down town evenings to see what is going on at headquarters, and having a social chat with any members who might be there. Indeed, one of the most active members of the Chicago Amateur Club pooh-poohed the idea when we mentioned to him that it was what a large number of our local amateurs wanted.

Now this is just the explanation of the rumor that a new amateur society was to be started here. Those who entertained the idea of starting it are, almost without exception, persons who never attend the meetings of the present club. Some of them may, possibly, have mentioned as one reason of their absenting themselves, that the professionals were a little too prominent in its discussions; but this really cut no figure in the proposition to establish a new society. As a matter of fact, no steps have yet been taken, and it is likely that the existing club will eventually be reorganized on a basis which will be satisfactory to all.

So much for the amateur side of our opening quotation. Now for the professionals:

"On the other hand, the society of professionals is not pleased because it has become 'mixed up' with the amateurs."

As it stands, this is simply a misstatement. We believe we will be sustained in saying that the Chicago Photographic Association, as a whole, is perfectly satisfied with the present arrangement, whereby its three most important offices are filled by amateurs. The *News*, undoubtedly, got the idea from the *Eye*, which is the official organ of the State of Illinois Photographers' Association, and whose editor and proprietor is secretary of that organization. Now, the State Association was started by two "soreheads" in the old society, the grievance in one case being that the party was not elected president for the current year, and in the other, that the gentleman found he could not control the election to suit himself. Therefore they met together in a gloomy cave near the outskirts of the city, and plotted the ruin of the society which had dared to treat them so cavalierly.

To this end a new association was to be formed, to be composed of professionals exclusively, and, as they found it necessary to offer some special bait in order to induce the photographers to flock to their standard, they decided to incorporate a "price plank" in their platform. How much they have accomplished in this direction—or indeed in any other—let the minutes of their meetings, as published in their own organ, be witness.

In conclusion, we may remark that, judging from some remarks made by a prominent English photographer who lately visited us, that there is fully as much cordiality between the professionals and amateurs in America as in England. The fact is, that neither there nor here does the "kicking" against the amateur movement come from those who attach themselves to the societies, but from those who hold themselves aloof.

We trust that the *Photographic News*, which has always been noted for its fairness, will correct the erroneous impression which the paragraph we have quoted is liable to convey.

◆

IN reviewing Mr. Tapley's Amateur Photography two journals—one published in London, the other in New York—have laid particular stres on the author's definition of an "actinometer" as "a hydrometer for testing density of fluids, having a scale which indicates the number of grains to the fluid ounce."

Now, Mr. Tapley has made blunders enough of his own, without being held accountable for those he has merely copied from others. The fact is, that the specially-graduated hydrometers used for testing nitrate of silver solutions were for years, and for all we know may be yet, called "actinometers" and "actino-hydrometers" by the makers and dealers in their catalogues. The name is, of course, ridiculous, but why did not the press make the discovery before?

◆

PROFESSIONAL VS. AMATEUR.

We publish on another page the answer of "Corridor" to our article under the above head in our issue of August 1st.

We have to apologize to our readers for the very choice language in which it is couched, but we thought it better to publish it as written than to attempt to polish it up—for two reasons; firstly, because if we had taken any such liberties with it, the writer might accuse us of mutilating and distorting his manuscript, and, secondly, because we think in its present shape it is more likely to be rated at its proper value by our intelligent readers than it would be if couched in the language of civilized correspondence. Therefore we must request the more fastidious of our readers to pass it over unread.

Our correspondent has evidently mistaken abuse and profanity—to say nothing of blasphemy—for argument, and herein he by no means stands alone amongst those who are now raising the cry: "Down with the amateurs!"

There is one paragraph of this choice effusion, containing remarks of a decidedly personal character, on which it may be as well to say a few words. It reads:

"But the real gall, if I may be allowed to use the expression, is in the cheek exhibited by a man that has done a little photographing in his day, and edited a journal for a few months, volunteering his advice to the old stock dealers, who have managed their business for years, and got rich at it, etc., etc."

Now, this view of the matter is a very natural one—in fact, it occurred to us while we were writing the article that "Corridor" is criticicing—but it admits of a very simple answer:

The longer a man trudges along in a certain *rut, the deeper that rut becomes, and the less able is he to see what is going on outside of it.*

Thus, a man may travel along in the bottom of one of the deep, narrow canyons which abound in some parts of our Western plains, and be in as total ignorance of anything that is transpiring on the table-land above him as though he were in another world. Therefore, because certain stock-dealers have grown rich by persistently following a certain well-worn rut, it does not necessarily follow that they are more competent to read the "signs of the times" as depicted in the broad universe around them, than an outsider who, simply because free from trade prejudices and the influences of a life spent amongst reams of albumen paper, boxes of card stock and tierces of hypo, is therefore in a more advantageous position to scan the horizon.

The fact that stock-dealers, notwithstanding their Methuselah-like experience and unbounded wealth, on which "Corridor" lays so much stress, sometimes make mistakes, is well illustrated by the experience of the earlier dry-plate makers in introducing their plates. It is matter of history that for a considerable length of time only one stock-house in the United States could be induced to take hold of them, and this is the one that has, perhaps, received more abuse than any other for encouraging the amateur movement.

As bearing on the broad general question of whether amateurs are a benefit or a detriment to the profession, we may cite an illustration from another line of business. We were conversing, the other day, on this subject with a wood engraver of long experience, and one of the most successful, from a commercial point of view, in this country.

This gentleman remarked:

"This same cry that amateurs were hurting the trade has been raised in our business, but engravers are now ready to admit that it was a false alarm. Now, my principal income is derived from wood-engraving; yet I sell and advertise amateur wood-engraving outfits, realizing therefrom a handsome profit; probably I sell over 2,000 sets a year, and, so far as I know, I am at present the only maker in the world of such amateur sets. Now, there are men in this business who said, when I commenced this amateur department, that I was cutting my own throat and that of every other professional wood-engraver. Some of the men in my own employ 'kicked' very vigorously against it. I was satisfied, however, that they were all mistaken, and time has justified me. The fact is, the number of amateurs who ever advance far enough to compete in any way with professional engravers is so small that there is always room for them inside the profession, to which they usually drift. The great majority—say ninety-five out of every hundred—find that the work demands more time and patience than they are able or willing to expend on it, and drop it after a very few months' practice. These persons, however, have at least learned one thing—viz.—that a good wood-engraving is something requiring much skill and labor to produce, and hence, when, in the course of their business experience or otherwise they happen to want an engraving made, they are willing to pay a fair price for it. If their studies have advanced far enough to enable them to distinguish between good work and bad, so much the better for all honest engravers, and, of course, we don't have any other kind in our business."

Now, all this applies equally to photography; but this same gentleman gave us some other "points" which may be applied to the question under discussion.

He said, "Although I had served a sort of apprenticeship to photography, yet I did not commence to use it myself in connection with wood engraving until compelled to do so by the photographers themselves. We found it necessary to get a certain amount of photographic work done in the shape of negatives, and prints on wood, but this I sent out to be done until the loss of business occasioned by the mistakes and delays of photographers drove me to the verge of desperation. I would send an object to one of them, of which I needed a negative and print immediately, and might think myself lucky to get it in two or three days, and then, probably, it was all wrong and had to be done over. Mr. Corridor, himself, probably caused me more annoyance and had more to do with determining me to do my own photographic work, than any other one man. If the argument is made that this work for engravers does not pay, I may reply that I have paid to one photographer alone between $60 and $70 per month, and it must be recollected that this class of work gives the photographer less trouble than any other. Even now, I frequently tell customers that I would prefer their getting a negative made by a photographer; but it is seldom that the result is satisfactory. Only the other day a case occurred. A lady wanted an engraving made of a new style of corset. I told her she had better get a negative made of it, and that my light and facilities were not suitable for making it; when the negative came to hand, however, it proved to be the wrong view of the object, so I told the lady if she would put on the corset, and could stand still long enough, I would try and make a negative of it myself; and the result was a success, notwithstanding the disadvantage in the matter of light under which I labored."

Finally: if our views on this amateur question are mistaken, we are open to conviction; but to convince us, or any other intelligent persons, it will be necessary to advance arguments and facts, not abuse and profanity.

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Camera Copying by Artificial Light.

In copying negatives or transparencies with a camera and lens, by artificial light, one of the chief difficulties encountered is that of securing even illumination over the entire surface of the picture to be reproduced. If the latter (say a negative) be placed between the objective and a lamp or gas flame, without any intervening refracting medium, only its centre will receive any useful illumination—in fact, a spot of about the same area as the flame, because only those rays which pass in a direct line between the source of light and the objective are available. By interposing a sheet of ground glass about half way between the light and the negative some improvement is obtained, but the result is still unsatisfactory.

If the negative be not too large, it may be copied by placing it in the place of a slide in an optical lantern, the condensers of the latter equalizing the illumination over a disk a little smaller than their own diameter, in a manner that leaves little to be desired, and, if the source of light be not too large in area, or very much out of a circle in form, it will work to perfection. Moreover, the power of light obtained in this way allows of an enlargement to eight or ten diameters without unduly prolonging the exposure, if gelatino-bromide, either on glass or paper, be the sensitive medium employed, and the negative be clear in the shadows.

It is at once manifest, however, that in this method of working we are confined to small, not to say very small, sizes, 4×5 being the extreme limit, and condensers of unusual size would be required for this, or the corners must be badly cut off.

But if we want to enlarge or reduce a 5×8, $6\frac{1}{2} \times 8\frac{1}{2}$, or 8×10 negative, not to speak of anything larger, it is evident some other arrangement must be adopted. So long as it is a question of reduction, and we are working with gelatine, the difficulty is easily enough overcome by using reflected instead of direct light; thus, a couple of lamps might be arranged one on each side of the camera, with ordinary glass reflectors behind them, set at a slight angle so as to evenly illuminate a sheet of white paper smoothly stretched on a board directly in front of the lens; or one lamp, set to one side, can be used, and the paper set at such an angle as to reflect most of the light in the line of the axis of the lens.

But it is very difficult to get sufficient light in this way for enlarging, especially if the ratio of enlargement exceed two or three diameters, or the negative is rather dense; and some other scheme must be devised.

In the *British Journal* of July 25 a solution of the difficulty is offered, which consists in placing in line with the optical axis of the camera and objective, and at some distance in front of it, an optical lantern complete, object-lens and all, and interposing between the camera lens and the lantern lens (at such a distance from the latter as experiment may determine to be most suitable), the negative to be enlarged, with a sheet of ground glass a short distance behind it, *i. e.*, between the negative and the lantern—the distance apart of the negative and ground glass being only sufficient to throw the latter out of focus. The writer points out that the lantern objective should be of large diameter, if an oil or gas light be used, in order to ensure that all the light coming through the condensers is transmitted by it.

The theory here, of course, is that the dispersive power of the ground glass refracts the marginal rays toward the centre again; but we do not see how it is possible that the edges can be as strongly illuminated as the centre, when viewed from the position of the camera lens, and the fact that the *British Journal* writer says a second sheet of ground-glass, preferably coarser than the first, may with advantage be interposed between the first sheet and the lantern, at a distance of an inch or so from the other sheet, rather confirms this view. This extra thickness of ground glass, however, would cut off a serious additional percentage of the light. The writer referred to points out the necessity for the ground glass being free from grease or other matter which would produce semi-transparent spots.

A correspondent relating his experiences with this method of operating, in a subsequent number of the same journal, states that he failed to get the necessary evenness of illumination with one thickness of ground-glass, and not having another handy, he substituted a large graphoscope lens, with good results; but, of course, his negatives must have been small enough to be included within the diameter of the graphoscope lens.

But, even supposing this system of working to be entirely satisfactory, it presupposes the possession of a lantern, and this is something rather exceptional than usual.

We propose here to describe a method which we think will be found satisfactory, and will give dimensions on the supposition that an 8×10 negative is the largest to be used, and that in this case $2\frac{1}{2}$ diameters will be the extreme enlargement required.

Make a hemispherical reflector of heavy cardboard, white on the inside, about twenty-eight inches in diameter, by cutting a number of "gores" to the proper shape, and pasting or glueing strips of canvas or heavy muslin over the joints, on the outside, a sort of "button" being used inside and outside to hold the gores together in the centre. A wire hoop should be attached to the circumference of this reflector to stiffen it.

In the center of this reflector and about four or five inches within the plane of its encircling hoop is placed the source of light, which should be an argand gas burner, if gas is available, otherwise an oil lamp of the "student" type may be metamorphosed by lengthening out the tube connecting the burner and reservoir sufficiently to bring the latter outside the reflector at the back (the gas pipe to take the same course if that be the illuminant used).

The object of this is to have as little opaque surface as possible in front of the reflector.

A hole must be cut in the top of the reflector over the lamp chimney, and the edges thereof suitably protected from the heat.

A small screen, just large enough to cover the flame, is attached to the front of the burner, so as to screen all direct light from the negative, which, placed a few inches in front of the plane of the hoop aforesaid, is illuminated entirely by the light reflected from the white paper hemisphere.

If the ratio of enlargement is not too great to admit of it, a further improvement in evenness of illumination can be obtained by interposing between the reflector and the negative a sheet of ground glass, but we do not think this will be necessary.

For negatives not larger than 5×8, a very satisfactory arrangement can be made by using a common twelve-inch glass reflector behind the light, and a sheet of coarse ground glass in front of it, no opaque screen being needed in front of the flame in this case. This last will be found a capital arrangement for reducing a 5×8 to lantern size, and in this case, as we have such ample power of illumination, two thicknesses of ground glass—one coarse and the other fine—may be used, say $1\frac{1}{2}$ or 2 inches apart, when the most perfect uniformity of illumination can be obtained.

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OUR contemporary, the *Photographic News*, in its issue of August 29th, contains an article on "The Swing-back and the Rising-front." We had supposed this subject had been pretty thoroughly exhausted of late, but it would seem from the article in question that there are still some photographers who are "at sea" concerning the principles governing the use of these appliances.

The writer of the article in the *News* appears to consider that the most important use of the swing-back is to get good definition in several planes at the same time—or in other words, to use it as a substitute for "stopping down" the lens. Its application for correcting distortion when the camera is tilted, he advises only in case of subjects containing straight vertical lines, as in architecture, and even then when no means can be used to avoid such tilting.

He specifically mentions the value of the swing-back in portraiture—especially sitting figures—for bringing into focus portions of the figure at varying distances from the lens. Seeing that this article was written especially for beginners and those whose knowledge of optics is of the scantiest—as its wording plainly implies—it seems to us that the writer should have cautioned his readers that, in swinging the back to bring near and distant objects into focus at once, the same distortion will be produced that exists when the camera is tilted without "plumbing" the ground glass. In landscape this may not usually be so serious as to offend the eye, but where the "swinging" is carried to excess with short focus lenses it certainly will be, and special cases may arise when even a moderate inclination will be objectionable. But in portraiture, as was plainly pointed out in the discussion on Mr. Greene's paper on the "Use and Abuse o the Swing-back," read before the Chicago Photographic Association last February, the distortion thus produced is serious in the majority of cases, and in the event of the sitter having some features or parts of the body abnormally large or small, (take, as an illustration, a sitting figure of a man with an unusually small head and abnormally large feet) and the distortion produced by swinging the ground glass to improve the focus (especially if the lens used be of rather short focus) will be sufficient to make a grotesque caricature.

There is one application of the vertical swing for focusing which we do not remember to have seen advocated, but it may sometimes be useful, viz.—in instantaneous marine or other views—where the distance at which the moving object will pass the line of sight can only be guessed very approximately, and where it is impossible to focus on the object itself. A slight inclination of the camera back to the axis of the lens will enable good definition to be obtained over a considerable range, without the use of a small stop, and the distortion will seldom be perceptible. We do not mean to recommend this for all classes of instantaneous work, but it will certainly do good service in some cases.

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PROFESSIONAL VERSUS AMATEUR.

EDITOR PHOTOGRAPHY:

Dear Sir;—In your issue of August 1, page 149, under the above heading, follows a long article, which appears to have been suggested to your mind by a few desultory remarks made by me a few weeks ago, in your presence.

With your permission, let us review a few of the points you have labored so hard to make. 1st. You speak of my long standing as a professional, and say you had always supposed me to be a man of tolerably liberal views, but that I somewhat astonished you by the narrowness of those expressed on that occasion.

Mr. Editor, there is no one that has had a better opportunity to judge of the calibre of my views on photography in years past, working as we have side by side in the Chicago Photographic Association, than yourself.

Now, I will ask the reader to review the above mentioned article carefully, and see what great sin I committed that seemed to you to be such narrow-mindedness. They will find that it was simply that I made a distinction, as every reliable lexicographer does, and as did the professor with whom I was conversing at the time, between the real amateur and the novices who have a legitimate business during the week, but keep cheap cameras to fill in their time on Sunday and at other odd times, by going to the parks and other public places of rendezvous, to drum up groups and other small jobs in photographing.

You astonish me, Mr. Editor, as much as you possibly could, by your readiness to degrade the art by defending this Sunday business, and trying to make it appear that this business is all forced on to these fellows, simply because the professionals will not do that kind of work, nor are they willing that the amateurs, as you call them, should, and the whole forcibly reminds you of the dog in the manger.

This is another illustration of what different comparisons the same circumstances will bring to the minds of men when viewed from different standpoints.

You were reminded of the dog, etc., while I was reminded of the brave fellow who had spent many years on the frontier fighting the Indians and hunting the wild beasts of the forests, coming out without a scratch, and finally settling down to a quiet life on a farm, to receive a mortal wound by coming into too sudden contact with a mule's heels. When the doctor told him that there was no help for him, that the animal had given him his death wound, he burst into tears.

The doctor said, "Can it be possible, my brave fellow, that a man who has fought the Indians in their strongholds, and attacked the bear in his den, and hunted the ferocious beasts of the forest, is now afraid of death?" He sobbed out that it was not the fear of death that caused the commotion in his breast, but it was the thought that he had been through with all these things, and had been spared to be kicked to death by a squirming, ge-hawing, braying son of a b— of a mule, was more than he could stand.

So it is with the old photographer who has defended himself and his profession bravely against all enemies, and just at the time they thought they were settling down to a quiet life, to see their business receiving its death blow by ten dollar cameras in the hands of a lot of braying jacks who keep telling us that we don't know anything about the business and never did. And that we never had the right things to work with until amateurs invented them for us, is more than we can quietly endure.

The next thing I shall consider is what you say my position amounts to, which is this, that I would have an amateur when asked to take a group, send the parties to some professional who has never done anything for the amateur, and never will, if he can help it. Let us see about this broad assertion. I do not profess to be any more liberal than the majority of my brother craftsmen, but for a real amateur I have great respect, and have more than once written long letters in answer to enquiries by one more than a thousand miles away, whom I never saw and never expected to see. Although I learned he was a retired wealthy gentleman, he did not send even a stamp for postage. In his last letter of enquiry he thanked me for my kindness, and promised me some prints, showing the character of that section of the country, but they have never materialized.

And the practical landscape man you mention as being present, is more generous than myself. I have known him to sit up late nights to help these pretended amateurs whom you are trying to defend, develop their plates, who after receiving this gratuitous service, were too stingy to pay him a fair price to make prints from them, and in some cases have taken them away to some cheap printer, simply to save a few cents in the difference asked.

In summing up my position you point out the very gallery you assume I would have the amateur send his applicants. You know very well, Mr. Editor, that I should never desire to see any one go to that class of galleries. But it is evident to my mind why you make an effort to carry the mind of the reader along for three miles, passing many first class and deserving photographers, to a sign the most outrageous ever put at the door of a business house—and to a person who has done more to degrade the art than any one in the city of Chicago, unless it is one of these would-be amateurs, with his cheap outfits. It is simply your desire to show the professional business up in its very lowest aspect.

You ask me to inform you why the amateur should act gratuitously as a tout for a gallery. There is no reason, and I would not have him do it. I would have the class in question do just what they invested their ten dollars for, to *mouse* around the country under that high sounding title, at odd times, for small jobs.

The time is not far distant when the real amateur will as much desire to get rid of the class that I object to, whom they are now hugging to their bosoms with so much warmth, and call dear brothers of science, as the professionals now do. But so long as the name amateur remains popular, this class will hang to it like barnacles to a ship, until they carry it down to destruction.

The means you suggest for us to get rid of this class, is too nonsensical for consideration, so I will pass on to your defense of the manufacturers and dealers in amateur goods. You put it well, how they rope in well meaning, honest men and women to part with their ten or fifteen dollars for these worthless outfits, but excuse them on the ground of its being a trick of trade and more legitimate than some meaner tricks practiced by some unprincipled merchants.

Rather a slim defense. You might as well say that the defalcation of $6,000 from one of our banks the other. day was more legitimate than some theft of $60,000. I think it would be hard to prove before a court of justice that either was legitimate.

But, to that part of my argument which, you say, seems more difficult to answer, yet find the difficulty more apparent than real. That is the advertisements of these dealers. You assume that I had a circular to railroad men in my mind at the time. You were mistaken in your conclusions, but there are enough misrepresentations in that to condemn it in the minds of all fair minded people. I will refer to a single item to the officers, which reads, "On their tour of inspection officers will find these outfits of greatest use in securing any points they may especially desire to preserve and refer to. As the work is done by camera, instantaneously, the securing of any object is easily accomplished while running at full speed."

You know enough of photography to know that the most practical with the best appliances could not make one good negative in a hundred from a railway train running at full speed.

But it was not this circular that was in my mind at the time. It was one for the purpose of drawing children into the trap. I have not it before me, but remember it read something like this: "With one of our amateur outfits and a gelatine bromide plate, picture making is so easy that any child a dozen years old with ordinary intelligence can succeed."

Now, I have not much sympathy for a man who is old enough, and had experience enough in the world, to be a railroad official, who allows himself to be taken in for ten or fifteen dollars, by some confidence operation; but I think that when any one tries to apply the art to innocent children, to persuade them to part with their little savings for some worthless thing, that every honest person should rebel against such practice.

Now, Mr. Editor, after your labored defense of the practice of the dealers in these goods for advertising how easy it is to make pictures, let us see what your unbiassed opinion is on the subject.

The reader will find it in your criticism on D. J. Tapley's book, in PHOTOGRAPHY, page 107, issued July 1. You take exceptions to the author's statement that gelatine plates need no skill in manipulation like the wet plates. You say, while it is true that less skill and care are necessary to produce some sort of result with dry plates, yet to get out of them the best of which they are capable, requires a great deal of experience and judgment, fully as much as with the older process. This undoubtedly is your unbiased judgment formed by actual experience. With these views and the facts before you, that this class of dealers are for the sake of a little profit to themselves, making every effort by misrepresentation and other means to draw into the ranks of photography a lot of novices to the great injury of the business, why should you then blame the professionals for transferring their business to such dealers as stand by their interests?

You say the *idea* of a photographer dictating to a dealer as to whom he shall sell goods. I have never heard of such a case. The nearest to it is their exercising the right which you and your British contemporary are making such a fuss about, which is guaranteed to every free Ameriican citizen, that is, to buy goods where they have a mind to.

I have passed over some items I should like to have considered, but have not the time to speak of all the absurd and unaccountable assertions expressed by you in that paper.

One is your incidental remark placing the enterprise of photographers at fifty per cent below that exhibited in most every other class of business. But the real gall, if I may be allowed to use the expression, is in the cheek exhibited by a man that has done a little photographing in his day, and edited a journal for a few months, volunteering his advice to the old stock dealers, who have managed their business for years and got rich at it, which virtually tells the dealer that he don't know how to run his business, if he did he would stock up with a lot of claptrap, such as the tyro, whose head has been turned by that high sounding word amateur, wants to buy.

I am glad you gave us that article for it answers most emphatically a question that has been asked me a great many times, that is, whether PHOTOGRAPHY was to be devoted to the interests of the professional or amateur.

There is no room to doubt your position, you say the paper contains the sentiments of PHOTOGRAPHY, and by them you propose to stand or fall.

Now, that you have been free to give your advice, allow me to give you a little of mine—but first let me say that I have always been an admirer of your frank and free style of writing, but that the best will make mistakes sometimes is certain—for it has been said that the great Author and Architect of the universe made such a mistake that it became necessary for him to make great sacrifices to open a way whereby the most perfect of his works might be saved from eternal damnation.

Now, my advice to you is to never write another such a one-sided article. If you do you may find the professional photographers not only exercising the right to buy goods where it seems for their interest to do so, but you may find them exercising the right to subscribe for such journals as are devoted to their interests. And it may be too late for you to find a way whereby your journal can escape the universal condemnation of all practical photographers. Yours most truly,

CORRIDOR.

Correspondence.

CHICAGO, Sept. 3, 1884.

EDITOR OF PHOTOGRAPHY—*Dear Sir:*—As several articles derogatory to the use of "Ives' Oxygen Lime Light" have been published, I would be obliged if you would give space in your journal to the following letter, from John L Atwater, Chicago, general agent for the Northwest for the "American Reprint, Encyclopœdia Britannica." I consider the experience of a man as well known as Mr. Atwater worth more to an enquiring public than the opinions of persons who have not tried, or even seen, the above apparatus. Yours truly,

L. D. MCINTOSH, M. D.

94 WABASH AVE., CHICAGO, Aug. 20, 1884.

My Dear Dr. McIntosh:—I have had such a different experience with the Saturator or Ether-Oxygen light, from that cited in the last number of the *Magic Lantern* that I think it would be well for you to know it.

As you know, it has been some months now since I began to use the Ether Saturator to form my hydrogen gas, and that with the grandest results. I have always had a light that far exceeded the oxy-hydrogen light for brilliancy, in that

I had a perfectly white light without that yellow tinge that the ordinary hydrogen gas furnishes.

Up to this time I have always used two tubes about thirteen inches long and two inches in diameter, and have supplied two burners for two hours each time, and never had a snap or any trouble, except that towards the last of the entertainment I would not have quite so strong a light as at the first. Since I have acted on your suggestion to have an extra set of fillings and dry out the ones last used about every ten days or two weeks, I have had the same full light from first to last.

When you consider that I have always kept two lights running full blast for two hours at a time, I consider that I have given the Ether Saturator, made after the Ives patent, a most severe test.

I must tell you of a little experience that I had last night at Bloomington, Ill., as I am sure it will interest you, and perhaps give a point that has not suggested itself to you.

As you know, I had my burners, or jets, bored with about twice as much opening as I had formerly been using so as to get a still more powerful illumination, and in connection with this, added an extra tube to my saturator. I expected, of course, to light up as usual, when, Lo and behold! I could not light up at all, for the reason that just as I would turn on my oxygen cock to set my light it would snap out on me. Finally, both burners snapped out. I then turned on my oxygen from the cylinder again a little stronger than before and secured my light, but in a very feeble way; but not thinking of any better way to do at that time I let it run, or rather turned it over to the operator, who went along for about an hour, when all of a sudden the top burner snapped out. I immediately went to the lantern and found that the operator had not turned on any more oxygen pressure than I had at first done. I turned on more oxygen and all at once secured the brilliant illumination that I had been seeking. Thus my problem was solved, and all my trouble caused by my stupidity in not seeing before that I needed more pressure from the oxygen tank to give me a stronger volume of ether-hydrogen at the first. In order to prove this, I then placed in position a pair of the largest nipples ever used with the oxy-hydrogen light, and whereas they would invariably snap out with me before, they now went off with the finest result I have ever experienced with the ether light. The whole secret, therefore, of the snapping out of the light is always from one of three causes. First, from the fact that there is air leaking into the tubing, burner or saturator, which it is the height of carelessness to allow; or, secondly, because the Ether Saturator has been run too long without drying out the tubes, which should be done at least once each two weeks, if the saturator is used every night, and better still, once each week; and lastly because, as I found to be the case last night, there is not enough pressure from the oxygen tank to force the ether to the burners, which can be remedied by turning on slowly more oxygen from the tank.

I am very sure, Doctor, that I would use no other light, and you know I am after the best, and any one that will use your new saturator, according to your new directions, will be certain to have an illumination far superior to the oxy-hydrogen light, and save the great annoyance of having to cart two cylinders about the country.

Very respectfully yours,
JOHN S. ATWATER.

Meetings of Societies.

REPORT OF THE PROCEEDINGS OF THE FIFTH ANNUAL CONVENTION OF THE PHOTOGRAPHERS' ASSOCIATION OF AMERICA.

THIRD DAY.—AFTERNOON SESSION.

(*Continued from Page 209.*)

After a short discussion section 4 of the amendment to the constitution was carried unanimously and without opposition.

The secretary then read the amendment relative to the officers of the association which appears heretofore.

Mr. Carlisle—Mr. President, If it is proper I would like to say a word: this matter seems to be of great importance. I represent, as vice-president, one of the smallest states in the Union; and I want to say that I hope my state will grow sufficiently large that we may have another man in the state who can come to the convention, and I want him to have the honor I have enjoyed for the past ten years; therefore I hope that this glory, or honor, whatever you may call it, will not be taken away from our brotherhood, and that there may be a representative man from each state at least, in order that he may secure a reduction of railroad rates. For instance, it is only a matter of fifty dollars to come over here, and if we get another man we may possibly get a rebate; therefore I hope we may continue to have vice-presidents from each state.

Mr. Klauber—It was not intended to dispense with the vice-presidents from each State, but to have two for the United States; the vice-presidents heretofore were nothing but a figurehead; they really never did anything; they never had any report, but the reason we propose to make two vice-presidents is that in case the president could not be present you would have no one to open your meeting, while if you have two vice-presidents, one can act as presiding officer. I believe you ought to have two vice-presidents by all means who are actual officers of the association, and if need be you can also have the usual number of vice-presidents.

Mr. Carlisle—I move to elect two vice-presidents who are actual members of the association. How would it look to elect two vice-presidents and appoint fifty? It don't cost anything to do this.

Mr. Bellsmith—In case of the absence or sickness of the presiding officer the power lies in the hands of the executive committe to appoint a presiding officer. I think you will find it in the constitution.

Mr. Greene—I propose as an amendment to that, that you elect one honorary vice-president from each State in addition to the two for the entire association.

Mr. Bellsmith—I want to explain my objection to this: It was that in electing a vice-president from each State it frequently occurs that a man who would be present was not a fair representative of the photographers of the State. I say unless great care is taken in the election of men for vice-presidents, who are representatives of the association, we are likely to inflict a great deal of evil and harm to the organization.

Mr. Blunt—I have come six hundred miles to attend this convention, and I desire to say we have no inferior photographers from my State members of this association, and they are all qualified photographers, and as for "Cheap Johns," I don't think they have money enough; the fact that we have vice-presidents from every State builds up this association; it is an honor to the man so elected; but he goes home and works, and induces men who have never been here before to come. Dispense with these vice presidents and I say you break up this association.

Mr. Bellsmith—I move that we insert a clause designating the duties of the vice-president.

A Member—Honorary vice-presidents from each State?

A Member—Honorary members generally are about as good as three legs to a chicken.

A Member—Is the motion before the house on this amendment?

The President—The motion was before the house, and is being discussed.

Mr. Carlisle—In order to get to the end of this matter I move, Mr. President, that the clause be referred back to the committee for alteration.

The President—The motion is made as an amendment; The only objection I can see to a vice-president from each State in the Union, is that it is going to be exceedingly difficult to name a man for vice-president who is not a member of this association, and who has allowed his membership to lapse by not paying his dues.

Mr. Klauber—I think I can settle that matter in two minutes; you are objecting to having a vice-president in each State; then call them secretaries—give the child another name.

The President—The amendment is withdrawn and it reverts back to the original motion that we adopt this amendment.

The amendment to article 5 was adopted with the addition that the secretary be required to make a quarterly report to the presiding officer, and turn over all his funds to the treasurer, who will give him a receipt for the same.

Mr. Klauber—I move that the names handed in by the nominating committee be regarded as the vice-presidents of this association.

A Member—Please have them announced to the house.

The President—The report is not here; you will have to take it by faith.

Mr. Blunt—I think it unfair to reappoint a vice-president for the present year, and I would suggest that we confer the honor on a member who is not present.

The President—This is in the hands of the committee, who are perfectly reliable.

The motion was carried unanimously.

The question of location being called up:

Mr. Carlisle—In the absence of Mr. Carbutt I would say briefly, on looking over the different locations, that the committee think well of Buffalo for many reasons. It is a cool, thriving little place; it is also easily accessible by rail from any direction: it is reached by all the leading trunk lines of the country; it is also easily accessible by boat, and the location would be very desirable, I am sure. It is within twenty miles of Niagara Falls, and many of our members have not, perhaps, visited that beautiful spot; excursion trains can be run up there from Buffalo at a very low fare. Then they have fine hotels and an excellent hall. It is fairly central, and of late years it is well known that Eastern people have not attended the conventions as they formerly did; they will not come far West. I do hope that if we get this association to convene at Buffalo next year we can get the New England and New York City people to be present, and I am sure their Western friends would be equally willing to go there, and I know our Southern friends would find it a cool and comfortable retreat from the heat, and I hope it will be chosen as the place.

Mr. Poole—I most emphatically endorse that nomination from this standpoint: We have not a very great number of photographers in Canada, but it is fairly well represented. If the convention meets in Buffalo it will very materially increase our attendance as Canadians, and it will add a very large number to the attendants. Moreover, it is only one hour's ride to the beautiful and picturesque scenery of the Falls.

Mr. Inglis—I think the Falls would be rather a drawback to Buffalo; the members would all go down there and leave the rooms of the meeting as empty as they are to-day. I think the members of this association ought to consider the benefits of this convention, rather than going about the streets with their cameras under their arms, taking views, and it would be much to their advantage. It is almost a disgrace that they leave this hall empty and allow all such important things as ought to come before the convention to the number here this afternoon.

The President—It is intended to impose a penalty for non-attendance at the next meeting.

Mr. Joshua Smith—Gentlemen, I rise to propose as the next place of meeting for this convention, the birthplace of this body; the place where we have the great city; where all the railroads center, and where the great, broad West has its metropolis; a place where the photographers will concentrate. In the name of the mother of this association I demand that the child be brought home, in order that she may see the growth it has reached, and I hope that Chicago will be the place selected; and if it is, you will have a very fine reception.

Mr. Wilson—Mr. President, the National Photographic Association met in Buffalo once, and had one of the best times they ever had; the results of the convention in a literary way were far ahead of anything ever known in convention times, and I am heartily in favor of Buffalo, but I am more heartily in favor of another place, and I will give you my reasons therefor. We have been courteously invited by the Mountain Lake Park Association to meet there; we have all the advantages of space, and the place is easy of access; and what is more important than all to a convention like this, is that by meeting there we save from seven hundred to one thousand dollars, the use of the building being given us free. This amount of money, if we have it, we can spend and get more good in the results in getting some lecturer or some one who would teach us something that would benefit us, and where the members could recount their experience, progress, and so forth. Now these are the advantages of Mountain Lake Park. If it was not for that, I would speak of New Orleans, as the world is going to have an exposition there, and numbers will want to attend it.

Mr. Klauber — Since I became a member of this association, I have always opposed going to a small place.

Mr. Wilson—It is not a small place; it comprises 850 acres.

Mr. Klauber — Or to a park, or Saratoga, or any of these places. But I have come to the conclusion that the best thing we can do to make the convention a success is to go to a place where there is not quite so much amusement, not quite so much to see, not quite so many animals as there are in Cincinnati, or Buffalo, or New York. I make a trip East every year, and I think we ought to try the country where the members will stay a little more together than here. I believe if we go to Mountain Lake Park we will not only have a thousand dollars, but we will rest ourselves; we will sleep better and not have any mosquitoes; and therefore I heartily endorse the nomination of Mr. Wilson.

A Member—As a Southern man I would like to make a remark as regards location. I am satisfied that this convention will make a mistake by going to Buffalo. Here are my reasons: We ought to go to Chicago or Mountain Lake Park, I don't care which. Each place has great advantages over Buffalo. I say this, that if we go to Chicago, I will promise you in the name of one of the largest railroads in America that you shall go from Chicago to New Orleans or back for one cent a mile, over the Illinois Central Railroad. I should never want to go to a convention if we cannot have quiet; do not care to go to any more excursions, I would rather not be bored to death.

Mr. Bellsmith—I was a resident of Buffalo for seven years, and can vouch for the fine facilities and many advantages to be derived from that location. As far as the noise referred to by the last speaker is concerned, I can promse him one thing, that he will have a hall in which you can hear every word with perfect distinctness back to the last seat in the room. It is located in a portion of the city not infested with heavy traffic, and the hall is particularly well adapted to speaking. It is large and has an abundance of room for exhibits of both stock and photographic displays. The hotel accommodations are excellent; I don't think their equal can be found in any other city. You can get hotels there for two dollars a day for which we pay here three and three and a half dollars. Railroad facilities are perfect, as it is reached by all the trunk lines east and west. Gentlemen, Buffalo is by far the best place.

The President—The place receiving the least number of votes shall be dropped.

A ballot was then taken, which resulted as follows: Buffalo, 42; Mountain Lake Park, 40; Chicago, 40.

Mr. Joshua Smith—I move that Buffalo be unanimously endorsed as the place of our next meeting.

The Chair—Those in favor of the resolution say aye. (Carried). The Chair appoints H. McMichael local secretary.

Mr. Gentile—I have here a report on the death of H. Baden Pritchard, which I desire to read. It is as follows:

> The committee appointed at yesterday's session to report on the death of the late H. Baden Pritchard, by the loss of whom two hemispheres are called upon to mourn,
>
> *Resolved*, That this association do hereby take cognizance of this, our severe loss, by expressing our deepest sympathy with the fraternity at large: the same to be spread upon our records. C. GENTILE.

It was moved and seconded that this report be placed on file for publication.

Mr. Klauber—I move, Mr. President, that this association tender a vote of thanks to the citizens of Cincinnati, and the press and to all that assisted in making this the pleasant and successful meeting it has been.

The motion was carried.

The President—We have had a grand and successful meeting; and as we are about to close this meeting, I would like to express to you my appreciation of your kindness and consideration, and thanking you again for your courtesy to me, I cheerfully resign the office of president to my friend, James Landy, of Cincinnati, and bespeak for him the same kindness and consideration you have shown to me. The exposition will be open until to-morrow night, while the business part of the convention will be closed by this adjournment. If there is no further business the motion to adjourn *sine die* is now in order.

Mr. Klauber—I forgot to include one little thing; this association ought to pass a vote of thanks for efficient services and the hard and good work that our secretary has done. I therefore move a vote of thanks to our genial and efficient secretary, Mr. Weingartner, and all the executive committee.

The motion to adjourn *sine die*, and the vote of thanks, were carried unanimously, and the convention adjourned to meet in Buffalo.

PHOTOGRAPHIC SECTION OF THE AMERICAN INSTITUTE.

A meeting of the society was held on the evening of the 2d instant, room 24, Cooper Union, President Henry J. Newton in the chair.

Secretary Mason acknowledged the receipt of several numbers of *Anthony's Bulletin*, PHOTOGRAPHY, the new Western journal, and journals of the Photographic Society of Great Britain, with a communication relative to the photographic exhibition to be held in England from October 4th to November 13th. The Scovill Manufacturing Co. had also kindly donated to the society's library a book published by them entitled "Picture-Making by Photography," by H. P. Robinson.

The usual vote of thanks was given for all publications received.

Mr. Gardner, chairman, said that the executive committee would report that the next meeting would be occupied with the consideration of photographic literature by distinguished members of the club and invited guests. He also read the report of the committee on field day excursion, which took place on Thursday, August 28th, at Coney Island.

Upon motion the reports of the executive and excursion committees were adopted.

Mr. Tho. Faris, of Brooklyn, then read the following paper, entitled "Personal Reminiscences":

"Although it is not necessary to have an eye in the back of the head, yet it is sometimes profitable to cast a retrospective glance at the ground over which we have passed.

One object in penning these few reminiscences of olden time is to acquaint in some small degree those who now practice the art science of photography with some of the trials and tribulations the pioneers had to undergo.

The daguerreotype (the foundation of the photographic superstructure) did not spring fully perfected from the brain of its illustrious inventor, but the grand discovery that the image formed by the camera obscura could be secured and rendered permanent in all its beautiful detail, was there ready to be brought to greater perfection and utilized by the efforts and experiments of others.

Daguerre himself was unable to produce a picture of the living subject on account of the length of time required to make the impression; the iodide of silver formed on the surface of his plate not being sufficiently sensitive to the action of light.

Prof. Morse of telegraphic fame (who was in France when the discovery of Daguerre was made public) in connection with Dr. Draper, of New York, were (I think) the first to use the fumes of bromine in connection with iodine as an accelerator. This was the first great stride toward utilizing and rendering practical this stupendous discovery.

To be able to make an impression without the direct rays of the sun on the object was the great desideratum. In other words to make a picture in the shade.

I recollect very vividly the first time I ever had my daguerreotype taken. After polishing the plate as well as we knew how with our very imperfect appliances and exposing it to the fumes of iodine until it assumed the requisite golden color (we had a piece of gilded metal for a guide as to color) it was placed in the rude camera. It required a sitting of fully five minutes, with the sunlight streaming through a large square of blue glass held in the hands of my co-experimentalist You may be sure I was glad when the sitting was over. After duly placing the plate over the mercury bath and heating it to the right degree you may imagine with what anxiety we took turns in watching the gradual development of the picture through the small piece of glass in the front of the mercury box. The result was thought to be wonderful; in fact it was tolerably good considering the circumstances; of course the eyes were minus; if I could have kept them stiller they would doubtless have been more distinct. This was before the discovery of the accelerating property of bromine.

After the discovery that bromine made the plates much more sensitive to light, we found it also made them much more sensitive to other influences. Then the trouble commenced, as bromine proved very fractious and intractable. We did not know at that time the best manner of applying the fumes to the plate. Various means were devised to accomplish the desired end.

The first bath that was used was simply a wooden box, the inside the shape of an inverted cone, with a place to insert a small bottle in the bottom containing a little bromine and water. The way it was used was to remove the stopper of the bottle and let it remain open for the requisite time with the lid of the box closed, then quickly inserting the stopper and removing the bottle, and turning the box upside down in order that the fumes might be distributed as equally as possible; then placing the plate (after it had been coated over the iodine) in the box until the bromine had acted sufficiently. Another plan—a great improvement on the foregoing—was a box with a lever projecting by which the stopper of the bottle could be removed and replaced as often as was necessary to charge the box; the box also contained a fan to distribute the vapor. This was termed the pump bath. The application of the bromine was the sticking point, as every daguerreotypist will recollect, especially if he has had the pleasant experience of being "stuck." Sometimes it would be impossible to get a good result for days at a time. Frequently the plate would come off the mercury bath without the slightest trace of a picture, then we would get, maybe, an eye and a half and part of a beautiful nose; all the rest would be covered by a dense fog. The worst of it was that at this early stage of the art we did not know why, as there was no Prof. Stubbs, who was supposed to know everything, to whom we could apply for a solution of the difficulty. We had to work it out each for himself; one knew very little more than another; we were all in the same boat. After the bromine was combined with other substances such as lime, chloride of iodine, etc., the coating of the plate was much more easily managed.

It was soon discovered, also, that it was impossible to make a good daguerreotype when there was the least smell of spirits of turpentine present.

Another difficulty we encountered was the solarization of the whites; the shirt bosom and collar would come out a beautiful steel blue as if the laundress had given them several extra dips in her bluing solution. This was remedied in a degree by covering the linen with pieces of black silk during the greater part of the exposure.

The greatest improvement in my opinion ever made in daguerreotyping was, as improvements frequently are, the result of accident. A Mr. Johnston, one of Plumbe's operators, in New York, after coating a plate as usual over the iodine, then over the bromine, accidentally returned it to the iodine box and coated it the third time; thinking, of course, the plate was spoiled, he concluded to try if it was so in the camera; after developing he was agreeably surprised not only to see a picture, but one of the most beautiful chemical effects he ever produced.

Previous to this improvement the daguerreotype presented a cold metallic appearance, without much body. In short they were very unsatisfactory as a picture. After the triple coating came into use the pictures were all that could be desired; they possessed a warmth and depth of tone that was very pleasing. The whites, especially, which heretofore were so hard to manage, assumed their true value.

It does one good, even in this day of startling improvements in photography, to examine some of these fine old daguerreotypes with their beauty of detail, exquisite modeling, softness and harmony of tone; they stand unrivaled by pictures produced by any subsequent process.

It is interesting to note in a new industry or in the application of a new discovery how one improvement suggests another; in the manner of polishing the plate for instance. We first used finely pulverized rotten stone with a tuft of cotton applied with a circular motion, which, of course, left minute scratches all over it; in order to obviate that difficulty we used a stiff brush cross wise of the plate, thus laying the scratches all one way; that not being satisfactory we then tried a buff stick covered with prepared buckskin and rouge, or prepared oxide of iron. This was a great improvement over the brush. After that we used instead of the buff stick the daguerreotype "tread mill," being a large wooden wheel in the form of an old-fashioned grind-stone, the buff leather being tacked on the circumference. We found some plates did not work well on account of the impure silver used in their manufacture; to obviate that difficulty and to render them uniform we applied the new process (new at that time) of precipitating pure silver on the surface by the aid of the galvanic battery, galvanizing the plates two or three times, and using the buff wheel between each application of the battery made them all that could be desired. The more labor bestowed on the plates in their preparation, the better the finished picture.

The camera and lenses used in the beginning were very crude and imperfect when contrasted with the beautiful apparatus of the present day, sparkling with nickel plating and all kinds of ornamentation, some of it more ornamental than useful.

The first lenses I used were two plano convex, placed in the tube with their convex sides together. They were about four inches in diameter and would cover a field about the size of an old-fashioned penny, not very sharp at that. The image on the ground glass had a beautiful prismatic appearance around the edge which was not very conducive to sharpness of outline Next came the achromatic lens, of course without the prismatic effect and with a much flatter field. This was a vast improvement on the old plano convex In our ignorance we supposed that the larger the lens the quicker the picture. I recollect being very much disappointed in a lens ordered from New York,on account of its small size, and was surprised to find that it worked about as rapidly as the larger ones.

In the beginning a great many efforts were made to construct a camera without any lenses. A friend of mine incurred considerable expense in having a concave mirror—cast of speculum metal—about ten inches in diameter with an aperture in the centre through which to see to obtain the focus. He ground and polished it himself, and after a great deal of labor in finishing and mounting in a tube found the field it covered entirely too small even to make a small daguerreotype. I believe there were some pictures made by parabolic mirrors

Another great difficulty we all had to encounter was the almost utter impossibility of procuring the proper chemicals and appliances with which to do our work; especially was this the case in the beginning of photography as applied to making pictures on paper. We had to make our own gun cotton, our own iodides and bromides, in short it was exceedingly difficult to obtain anything we could rely on. At the first, even after we had succeeded in making a passably good daguerreotype, we were unable to procure a proper fitting for it. Cases were very scarce and expensive, and the pictures were too small to place in frames to advantage. I conceived the idea of making my own cases, procuring the wooden part from a cabinet maker. When I came to cover them I had nothing with which to emboss the morocco and they did not look well plain. As "invention is the child of necessity" I hit on a plan to make my own embossing plate. Obtaining a book with a very pretty design embossed on the cover, sharp, and in good relief, I covered the outside with gold leaf in order to give it a continuous metallic coating, and made an electrotype of it, (the electrotype was then a very recent discovery) backing up the plate with the proper thickness of type metal in order to work it in a common printing press. Thus I was able to make very pretty embossed morocco cases.

The electrotype apparatus used was a very primitive affair, merely a water tight box with a porous diaphragm dividing it into two parts, in one of which was suspended my book cover in a saturated solution of sulphate of copper, in the other water acidulated with sulphuric acid in which was suspended a zinc plate. The connection was made by a little cup of mercury in which the ends of the suspending wires were placed.

In the early days of the business (daguerreotyping soon came to be a business) the fight to secure the patronage of the public was as furious as it is at the present day with the exception that we did not then as now use "clubs" in order to knock our business opponents "out of time." An incident in illustration. One of my competitors for the privilege of taking "the heads of the people" induced Herr Driesback, the famous lion tamer, to visit his gallery with his pet tigers. He succeeded in making a very fine whole plate group of Mr. D. and his two pets.

This was a regular "ten strike," and for some time I was beaten, but at length I got even, if not a little ahead, by having the two elephants brought to my gallery. As we were unable to induce them to go upstairs we had to be satisfied with taking their portraits in the street which we accomplished successfully by the aid of the police.

Mr. H. N. Grenier was called upon for remarks concerning line-work negatives. He recommended the use of a bath of the following strength:

Nitrate Silver	45 grs.
Water	1 oz.
Nitric Acid	1 drop.

The bath should be sunned several days. There should be no metallic precipitate on a plate treated with the developer, without exposure to light. If there was that solution would not make a good clear plate. The developing solution should be about 18 grains to the ounce, viz:

Proto. sul. of iron	288 grs.
Water	16 oz.
Acetic Acid, No. 8	4 oz.

If a flat negative was wanted, protosulphate of iron might be used to the amount of about 10 grains. A focusing glass must necessarily be used. Aside from a good bath and a good focus, the photograph should be timed exact, counting the seconds. Perhaps it would be found necessary to expose one negative two seconds and another one three seconds. It should be fixed in cyanide of potassium immediately. After the picture is fixed, he used six grains of sulphate of copper to two grains of bromide of potassium to each ounce of water. This solution would bleach or whiten the image as wished. After putting in bromide of copper it should be washed clean and then the silver put on. He recommends the following intensifier:

No. 1.

Sul. of Copper	96 grs.
Bromide of Potassium	32 grs
Water	16 oz.

No. 2

Nitrate Silver	30 grs.
Water	1 oz.

The silver must be neutral. As a fixing for the intensity, use hydrosulphuret of ammonia diluted with twice its bulk of water. There is another intensification that might be used, namely, the red prussiate of potash, but that is very hard to work. The fixing of these line pictures with sulphuret of ammonia did not seem to intensify, but it improved the printing quality of the negative and kept its color for years. He then exhibited negatives and proofs. In reply to inquiries as to his bath, he said he preferred using the common hydrant water rather than distilled. He made the bath alkaline with liquid ammonia and exposed it to the sun for twelve hours or more after putting a little iodide in it. It was then filtered, acidulated and is ready for use. The bath for line work required to be somewhat more acidulated than for portraits. He mixed his collodion by putting first the alcohol in a bottle, and then the gun cotton into it, afterward adding the sulphuric ether. The following is his formula:

Alcohol	8 oz.
Id. of Ammonium	80 grs.
Bromide of Cadmium	32 grs.
Anthony's Neg. Gun Cotton	114 grs.
Sulphuric Ether	8 oz.

In reply to a question relative to the use of hydrosulphuret of ammonia, he said it was used in the proportion of one part ammonia and two parts water. In making line work negatives the lines must be absolutely clear, and he had not been able to use dry plates. Dry plates might do for zinc impressions.

Mr. B. J. Falk exhibited some pictures sent him by Dr. Vogel which he said were good illustrations of the Doctor's great invention—mixing eosine with collodion. He found that the old theory that we always photograph objects one way—no matter on what sensitive surface—was incorrect. He proved that the surface itself. the nature of it, determined how the colors shall photograph. One of the pictures was photographed by the old collodion process. A yellow dress took dark. Another yellow color in another picture looked a great deal lighter than the blue.

The Chairman thought the specimens presented by Mr. Falk were of more than ordinary interest because concerning something new, showing orange and yellow taken with the same strength as the blue and the violet. In one photograph there was very little difference between the orange and the blue. To a certain extent all this was revolutionary, for it has been a cardinal idea in photography that the actinism of the solar ray was in the ratio of the wave length, going in a gradual scale from the violet to the red, but now. by certain chemical combinations, the action of the solar ray seems to be changed. This raised an important question with reference to the correctness of some ofour theories.

A number of proofs from photographs made at Coney Island by those who participated in the field-day excursion were passed around.

An imperfect plate having a metallic lustre when looked at by reflected light was handed around for diagnosis and prescription. The Chairman said it was not the result of bromide in the developer as some one suggested. It probably came from the manner of packing. Dry plates did not deteriorate in tin boxes. However, from a commercial point of view that was not important, if the consumer bought and used the plates without delay. Almost all paper manufacturers used large quantities of hypo in manufacturing paper.

Mr. Mason said it would be remembered by those attending last spring's meetings that there was some discussion in regard to the fuming process, the fuming of albumen paper with ammonia, and as to who discovered it and to whom was due the credit of that discovery. At that time he stated that he would bring with him to this meeting proof of what he considered to be the beginning of the whole matter, but as it was late, and he did not see any present who took part in that discussion, it would be impossible to go on with the case. His documents, twenty years old, proved that the matter had been before the public a great many years.

Mr. J. B. Gardner referred to the use of old gelatine plates the second time and which sometimes led to difficulty. He had a number of these plates sent him. After throwing them aside for a while he thought he would make some disposition of them, and asked Mr. Beebe the best method. He was advised to take boiling water to free the plates from gelatine. He followed the directions to first put the plates in tepid water and afterwards in boiling water. With some plates this treatment did very well, but others did not seem entirely free from the gelatine surface. He tried a strong solution of potash, but still it remained. One of the dealers recommended the trial of liquid ammonia. That failed. A strong solution of sulphuric acid was used, but without satisfactory results, as it left the surface of the plate in bad condition for making pictures. The point was, that on all these gelatine plates there was a sub-stratum used in order to keep this gelatine in place. He had come to the conclusion that it was insoluble glass. Makers were advertising that they will take back these plates for the purpose of recoating them, and the consequence was that when these plates were again used and developed they had a ghost of a picture of something perhaps away down in Virginia, or the Niagara Falls or somewhere else.

A visitor said he had noticed after the removal of the film that there was an image on the glass.

Mr. Grenier thought a weak solution of nitric acid and water would be sufficient to clean the glass. The acid should be diluted about one-third in which the plates should lay over night when they should be washed well, rubbing them thoroughly and rinsing in clean water. He coated with a solution of albumen as follows:

The white of three eggs, or	3 oz.
Water	½ gal.
Acetic Acid	1 oz.

A visitor recommended cleaning the plates with potash.

The Chairman said he would use pure commercial sulphuric acid.

Discussion was had as to the second image developed.

Mr. Gardner suggested as a possible explanation of its appearance that when the soluble glass is poured over the plate it became insoluble, and the film was sensitive to the light, to a certain extent, so that apparently every particle of the emulsion has gone from the plate, and yet the soluble glass contains the ghost of the picture which was exorcised by heat. Many faded daguerreotypes could be restored by the action of heat and a very weak solution of chloride of gold.

The Chairman said many manufacturers used a very weak solution of gelatine in which is incorporated a very small quantity of bichromate of potash, which, after it was dry, was insoluble. Relative to daguerreotypes, Prof. Draper claimed to have made the first daguerreotype of the human face. A picture of his wife, which he presumed Mr. Mason would remember, was exhibited by the Doctor twenty five years ago when it was observed that the action had gone entirely through the copper plate and was visible on the back.

On motion of Mr. Gardner, a vote of thanks was given to Mr. Faris for his admirable paper, and to Mr. Grenier for his instructive remarks.

On motion, adjourned.

CHICAGO PHOTOGRAPHIC ASSOCIATION.

The September meeting was held at the usual place on Wednesday evening 3d inst. Dr. Garrison, president, in the chair.

Owing to the hot weather and the fact that several members were out of town, the attendance was much below the average—in fact, there were only about a dozen members present. The reading of minutes of last meeting was dispensed with.

Mr. Gentilé informed the members that the next meeting of the State of Illinois Photographers' Association would be held at Joliet, Ills., on Tuesday next, Sept. 9th, and that he was instructed to invite the officers and members of this association to accompany them. The photographers of Joliet had arranged to do something in the way of entertaining them, and the programme included a visit to the penitentiary—arrangements could doubtless be made for those who might wish to remain there. The train they proposed to take was the 9:45 A. M. C. R. I. & P.

The Chair, on behalf of the association, thanked the State Association for its very kind invitation, and announced his intention of accepting it personally, if circumstances permitted his doing so.

The Chair, finding that no one seemed disposed to make any remarks or start a discussion, observed that he had been assiduously experimenting in dry-plate making for several months past, and latterly in the direction of increasing sensitiveness. He had been able to produce plates much more rapid than it was ordinarily supposed possible to make them. Now, Prof. Hough had established (at least to his own satisfaction), by experiment, that, using the full aperture of a No. 1 Darlot rapid hemispherical, and exposing on a well-lit landscape, one second was about the right average time for a wet collodion negative, while half a second might be set down as the minimum. Prof. Hough had also tested the length of exposure given by a drop-shutter (with a rubber band attached to accelerate its fall) by means of a thermometer bulb attached to a revolving arm, so placed that the sun's image was reflected from the bulb, and connected with the observatory chronograph; in this way he had found the exposure given by the shutter with rubber attached to be $^{1}/_{50}$ second. (See PHOTOGRAPHY May 1st., p. 12). Now the full aperture of the lens above referred to is 20 mm. The 9 mm. stop has an area equal to $^{1}/_{5}$ that of the full opening ($^{81}/_{400}$). With some of his more recent plates, the speaker had obtained a fully-detailed negative of a well-lit landscape with the drop-shutter and rubber band, using the 9 mm. diaphragm. Assuming the correctness of Prof. Hough's experiments and deductions, this represented an exposure of $^{1}/_{50}$ second, and $^{1}/_{50} \times {}^{1}/_{5} = {}^{1}/_{250}$, so that, taking one second and full aperture as right for wet collodion, his (the speaker's) plate was 250 times as rapid as a wet collodion plate. But, taking Prof. Hough's minimum of half a second as the proper standard for wet collodion, the dry-plate in question was still 125 times as rapid. His own opinion was, that 200 times was about fair, because he obtained fully as much detail with the 7 mm. stop and spring shutter as Prof. Hough had ever got with a wet plate in half a second, using full aperture. He did not think, however, that such plates could be successfully worked without greater precautions than were customary with "practical" photographers. Moreover, in two plates of about the same general rapidity, but prepared by different formulæ, there might be a great difference in sensitiveness to certain parts of the spectrum.

Some discussion ensued as to whether Prof. Hough's standard for wet collodion was correct, the secretary thinking it rather slow. Mr. Joshua Smith said that in working wet collodion, it was quite possible, by variations in formulæ and details of working, to make a difference of ten times in rapidity, without any perceptible difference in the results.

Mr. Greene asked the Chair whether, supposing an exposure of one second to be correct with the smallest, or 3 mm. stop, an exposure of $^{1}/_{45}$ second with the full aperture of 20 mm., would yield as good a negative,—or, expressed generally, would an exposure 1, with an aperture whose area is x, give the same result as an exposure $^{1}/_{50}$, with an aperture of area 50 x?

Neither the Chair nor any one else present, seemed able to answer this question definitely, either from theory or experiment.

The Secretary read an article from *Le Moniteur de la Photographie*, concerning an alleged process for photographing in colors, which seems to have been creating some excitement—at least among the laity—in Paris.

[This article will be found in full on another page of this number.—ED.]

On motion, adjourned.

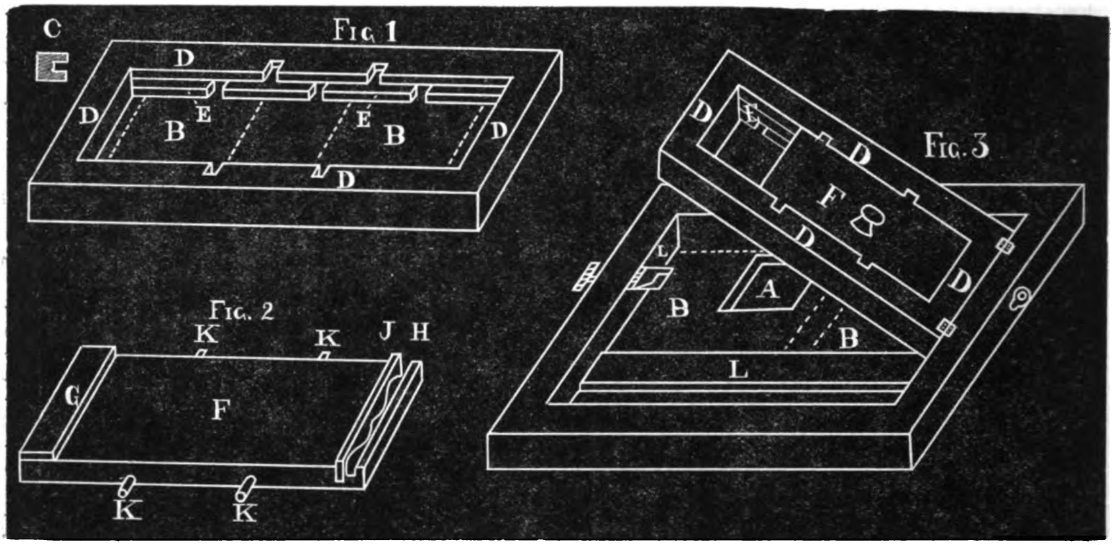
PRINTING STEREOSCOPIC TRANSPARENCIES.

As the subject of stereoscopic transparency printing has been recently revived, and a discussion raised at one of the meetings of the Photographic Club by Mr. Lawrence Baron as to the best methods and appliances to adopt, in response to a wish expressed by one or two friends we propose to describe a printing-frame we devised and had constructed some years ago which, while obviating the necessity for cutting the negatives, enabled the necessary adjustments to be made with rapidity and precision.

In its simplest form—that is to say, when required for use only with negatives of the old stereoscopic size, $6\frac{3}{4} \times 3\frac{1}{4}$—it consisted merely of a negative frame (*fig.* 1) and a sensitive plate carrier (*fig.* 2) of peculiar construction. The former consists of a sort of tray, about three-quarters of an inch deep, with an aperture A, in the centre of what may be called the bottom B B, of the exact size the pictures are required to be—two and three quarter to three inches square according to taste; or a shallow rebate may be sunk to receive masks of stout zinc or cardboard, so that the shape and size of the pictures may be varied to suit the subject and circumstances.

The longer sides of the frame consist of mouldings having the section shown at C (*fig.* 1), the ends being solid. On the upper surface of each of the sides D D two slots are cut as shown, so that when the plate-carrier is placed in the centre of the frame its projecting runners will drop into the longitudinal grooves E E, only one of which is visible in the diagram, a space of (say) one-eighth of an inch remaining between the lower surface of the plate-carrier and the bottom of the tray. In the lower floor of the groove E at each side are cut three similar slots—one in the centre, the others equidistant therefrom and corresponding with the width apart of the projecting runners of the carrier.

The carrier, which is shown in *fig.* 2, with its under side uppermost, consists of a block of perfectly flat wood half-an-inch thick, three and a quarter inches wide, and eight and a quarter inches long. Across one end is glued a strip of very hard wood or of brass three-quarters of an inch broad and one-sixteenth thick, with a perfectly square edge. At the opposite end a groove H is cut, three-eighths broad, three-eighths deep, and the same distance from the extremity of the carrier. A strip of very hard wood or brass, J, an eighth of an inch thick and of such length and width that it reaches from side to side of the carrier and projects one-sixteenth of an inch beyond the surface, is kept in position by a good, strong spring or springs, as



shown. The projecting runners K K K K may conveniently be made by driving into the sides of the carrier short lengths of brass rod an eighth of an inch or three-sixteenths thick, allowing a quarter of an inch in length to project. The reverse side of the carrier has a knob by which to hold it.

Now, it will be seen that if a plate measuring 6¾ by 3¼ (the size of a stereo. slide) be pressed down upon the centre of the block it will be gripped between G and J by the spring, and so securely held. Further, if the carrier with the plate downward be placed in the centre of the frame D D D D the runners will drop into the longitudinal groove, in which position the carrier may be freely moved to either end of the frame without the surface of the plate coming in contact with anything. But as soon as the carrier reaches the extreme end of the frame its runners on either side coincide with two of the lower slots, and the plate and carrier drop into contact with the bottom of the tray, in which position—if the respective dimensions of the runners and the slots be properly arranged—there is no chance of abrasion of the contact surfaces by lateral motion.

To use the frame the negative is laid face upward at one end of the tray, its position being fixed by a strip of thin brass shown by the dotted lines at either end, so that the proper portion comes opposite the aperture A; the carrier, with its sensitive plate, is placed in position and run to *the opposite* end of the frame, when the plate falls into contact with the negative, the left hand half of the former being superposed upon the right-hand half of the latter, or *vice versa*, and while thus held in contact the first exposure is made. Now, by means of the knob, lift the carrier into the central groove, and while sliding it to the opposite end of the frame incline the latter in the contrary direction, when the relative positions of negative and plate are reversed, and the second exposure is made. This form is, as we have said, only suited for negatives of the old standard size, but the same principle can easily be adapted for use with double negatives of any size, though it then necessarily becomes a more complicated arrangement. *Fig.* 3 will, however, sufficiently explain the more complete frame. Here D D D D is again a frame identical in size and construction with *fig.* 1, but *minus* the bottom, which converts it into a tray. F again represents the carrier, which is in every respect similar to *fig.* 2. The tray in this case is separate and the frame attached to it by hinges; its size will depend upon the dimensions of the negatives to be used. In order to permit a three-inch square to be printed from any portion of either half of (say) an 8×5 negative it is necessary to provide movable guides regulated by screws, two of which are shown in L and L′, the third, corresponding with L′, being hidden by the hinged frame D D D D. The position of the negative shown by the dotted lines may be varied, by altering the positions of the guides or stops, so that the top right-hand corner or the bottom left-hand or the centre of either half of the negative may be selected.

It would be quite useless to attempt to give working dimensions without knowing the size or sizes of negatives to be employed, the distance apart of the lenses, the distance apart the images are required, and the size of the half pictures—all elements of importance. A frame for 7½×5 negatives only may be made whose extreme dimensions will be 12×10, and allow every latitude. If, however, it be required for use with 6¾×3¼ negatives as well, more elaborate adjustments would have to be made in order to accommodate the greater range required in the sliding parts. The frame for 6¾×3¼ negatives measures about 12×4¾, and can be constructed for a few shillings.

Sixteen or seventeen years ago, when stereoscopic work was more in vogue, we had several of these frames made of various sizes for ourselves and friends, and found them a very great convenience, more especially when duplicates were required from the same negative. The adjustment once made, the trouble is no greater and the time occupied longer only by a few seconds than in making a single transparency by superposition.—*British Journal of Photography.*

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The Photocalque Process.

As employed at the office of the Ministry of Public Works. (France.)

BY M. CHEYSSON.

For accompanying projects of railways, roads, irrigating or navigable canals, or for illustrating studies on economic questions, we frequently have to make special plans, which we copy from general maps duly transformed.

These general maps contain, almost always, a crowd of details useless for our special plan, of which they would only obscure the distinctness. This defect becomes especially apparent when we have to reduce the scale. It then becomes necessary, on the one hand, to eliminate everything not essential to our proposed object, and on the other hand, to add, or emphasize (by exaggerating them far beyond geographical truth) the particular elements to which it is desired to attract attention.

For obtaining this result we have hitherto had recourse to tracing paper. After reducing photographically the general map to the scale adopted for the special drawing, we apply over the print a transparent paper. On this paper the draughtsman traces the details to be preserved and those which are to be added. For this purpose he uses India ink or autographic (transfer) ink, according as the drawing is destined to be reproduced by lithography, by direct printing on sensitive paper, or by photo-zincography.

Unfortunately, the photographic proof often lacks clearness and the tracing paper transparency, so that, under these conditions, the working up of the design presents practical difficulties. Therefore, to avoid these difficulties, we conceived the idea of dispensing with the transparent paper and drawing directly on the photographic print itself. This idea having completely succeeded, we deem it right to publish the very simple manipulations which have permitted its realization.

I.

If a single copy only is needed, destined to be attached to a document or reproduced by a photographic negative, the problem consists in drawing directly on the proof of the reduced map, then in causing the disappearance of the useless or obnoxious details by a reagent which will have no effect on the ink used by the draughtsman in tracing over the lines or adding new features.

The photographic proof obtained by the reduction of the general map is printed on salted paper. It is fixed without toning. On this proof, thus prepared, we draw directly with India ink, and with much more certainty and rapidity than on a tracing paper of insufficient transparency.

The drawing completed, the sheet is plunged into a chloride bath composed as follows:

Bichloride of copper	15 grammes.
Ordinary water	100 cc.

After a few seconds' immersion, the photographic image completely disappears, the reduced silver which formed it having passed into the state of white chloride of silver.

At this moment the sheet of paper is withdrawn from the bath, and washed with an abundance of water. Then it is passed into a bath of hyposulphite of soda to dissolve the chloride of silver and prevent the reappearance of the image under the action of light; and finally washed and dried.

To avoid fixing in hypo, the following bath may be used, which dissolves all the salts of silver formed.

Solution No. 1.

Water	250 cc.
Cyanide of potassium	10 grammes.

Solution No. 2.

Water	250 cc.
Iodide of potassium	4 grammes.
Iodine in flakes	½ “

For use the two solutions are mixed in the proportion of 100 parts of the first to 130 parts of the second. We might also employ a mixture of bichloride of copper and cyanide of potassium in the proportion of 100 cc. of the solution of bichloride of copper and 10 cc. of the cyanide of potassium solution. After one or other of these baths, the drawing is washed thoroughly and allowed to dry.

II.

If we wish, on the other hand, to procure through the medium of the printing press a large number of copies, we still draw directly on the photographic image, as in the preceding case, but replacing India ink with auto lithographic ink; and in this case it is useless to cause the disappearance of the silver image, unless the draughtsman wishes to see the effect of his work isolated. Once the drawing is thus prepared, it suffices to transfer it upon stone or zinc and print as usual.

The practical working of this very simple idea encountered a practical difficulty which it was necessary to overcome. It is well known, of course, that the paper employed for transferring owes to its gelatinous surface the necessary adherence for transferring the drawing, etc., to the stone or plate. The salted paper used for the photographic print is not gelatinized (*encollé*), and cannot, therefore, serve this novel purpose without special preparation.

At first we tried to transform the regular transfer paper into sensitive paper by sensitizing it with salts of silver. But we very soon ascertained that the nitrate of silver bath underwent a rapid change from contact with the gelatinous coating of the paper. We were therefore compelled to adopt the precisely inverse system of transforming by a sizing process the photographic paper into transfer paper.

This system having given very good results, is the one we have definitively adopted, and of which we are going to give the details.

When a print of the reduced copy of the general map has been obtained, which is to serve as the basis of our special drawing, it is fixed in hyposulphite of soda; then it is given a preliminary sizing, composed of starch to which has been added $\frac{1}{4}$ of gum arabic and $\frac{1}{8}$ of sugar. When this first coat is thoroughly dry, it is succeeded by another of gelatine, by drawing the paper rapidly over the surface of the hot gelatine in a dish.

The sheet is allowed to dry thoroughly, and then calendered. It has thus become an excellent transfer paper, on which the draughtsman can work with ink or lithographic chalk, guiding himself by the photographed map.

The drawing completed, it is transferred by means of the press on stone or zinc. Only the features traced by the draughtsman are reproduced, the photographic image remaining inert. We have, therefore, as in the former case, a design comprising all the useful elements borrowed from the foundation map, to the exclusion of all the others.

When the printing plate or stone is thus prepared, nothing remains to be done but take off the required number of copies in a lithographic press.

If the transfer has been done with care, the paper is in no wise altered, and may be successfully submitted to new operations of sizing and drawing. This process therefore lends itself readily to the execution of designs in several colors, and to their printing, with perfect register, since the same proof from the foundation map serves for the support of the successive drawings and transfers. The specimens attached to this paper represent a map printed in four colors, with the single photographic print which has served for all four transfers.

To sum up, the processes which form the object of this presentation consist in suppressing the employment of tracing paper, in permitting to work up the design directly in India ink or lithographic ink on a photographic print, which serves as a support to the drawing, but from which all the useless or undesirable details are eliminated, as one removes a scaffold or centreing when the structure is completed.

To this process I propose to give the name of *Photocalque.*

It is only fair to add that the details of application of this idea and the practical success of its realization are due to the researches of M. Perronne, head draughtsman at the offices of the Ministry of Public Works, assisted by M. Ginestet, photographic operator.—*Le Moniteur de la Photographie.*

WE received, just as we were going to press, and consequently too late for insertion, a communication from Mr. Seavey relatative to his management of the local secretaryship of the New York convention, accompanied by copies of letters relative thereto, published in the *St. Louis Practical,* November, 1881.

THE AMERICAN PHOTOGRAPHIC CONVENTION AND ITS RESOLUTIONS REGARDING PRICES.

If the various reports from both newspapers and private individuals are to be credited we fear that the convention of the Photographers' Association of America for 1884, held in Cincinnati three weeks ago, under the presidency of Mr. J. H. Kent, of Rochester, New York State, must take its place in history as the most unfruitful of all the conventions of which we possess any record.

Here we find a large body of zealous photographers showing their earnestness by traveling many hundreds of miles in order to learn something concerning the technics of their craft, and taking no pains to hide their feelings at the bitter disappointment experienced by them. It is said that some of the members have expressed an intention of discontinuing their attendance at these annual meetings in consequence of the scanty bill of intellectual fare prepared for their reception. A wise executive committee would have taken care to provide something more substantial for their *clientèle* than music, dancing, or a visit to the zoological gardens, even at the doubtless small charge of thirty-five cents, which, from the report in our last number, appears to have been insisted on; but, while these are in themselves most praiseworthy means of relaxation after hard work, the work itself is presupposed. Something more than a *soufflet* is necessary to keep up the strength and physique of an able-bodied man. A dessert implies a dinner, which, if not altogether omitted in this case. does not appear to have been supplied in such sufficiency as to have satisfied the requirements and wants of those who traveled so far in order to learn something. The committee probably knew or had their own ideas as to what the members of an American association had a right to expect; but we venture to say that if a similar convention of three days' duration were held in any town in Great Britain the committee of organization would have ensured there being from four to six papers, lecturettes, or lectures *daily* on some topic of interest connected with practical photography.

It is quite possible, however, that, in the interests of the stock-dealers and dry-plate and other manufacturers to whom the treasury of the Association is annually greatly indebted for their liberal donations, the committee may not prefer to encourage any counter attractions to the great display of new apparatus, which forms a leading and attractive feature of these conventions, not to speak of the exhibition of photographs, many, if not most, of which are shown in the interests of rival dry-plate makers. It is right and proper that dealers and manufacturers should attend such gatherings to display and sell their wares, being both convenient to the photographer and profitable to the merchant; but certainly it is to the advantage of the former that he be made acquainted in the conference hall with matters of chemical, æsthetic, or manipulative interest; and it is the sparseness with which this element of the convention has been supplied that has given rise to so much dissatisfaction on the part of the members.

But it may be that the committee neglected to make provision for papers in the expectation of there being a rush of volunteers. It is, however only a few weeks since a gentleman officially connected with a photographic society in Philadelphia, when on a visit to London, gave it as a characteristic of the American photographer that, while always ready to hear or learn, he was not equally ready to speak or communicate. This being the case, the committee of management of this great national organization should have arranged for essayists and speakers months in advance of the date of meeting, and have issued an official programme of the proceedings. In a country like America, possessing so many men of undoubted talent, one would think that the difficulty should be in making a proper selection in the midst of such an *embarras de richesses*.

We observe that a large portion of the brief period devoted to the discussion of photographic topics was taken up in a consideration of the prices which photographers ought to charge for their work. The absolute impossibility of arriving at any definite determination in a question of this nature is illustrated in the case of the city of Chicago, in which low prices, unfortunately, appear to prevail. In that city is a certain photographer who alleges that he alone of the fraternity there takes cabinet photographs of a high class, into the truthfulness of which assertion it does not concern us here to inquire. Upon a resolution having been adopted in the convention to charge hereafter eight dollars per dozen for first-class cabinet portraits, five dollars for second-class, and three dollars for third-class pictures, this photographer—who designates himself "the Dictator"—promptly issued a message to the convention, relative to this resolution (a copy of which we have received) as follows:

"Please do not include Chicago photographers in your resolutions in regard to advancing prices, as *I will not* permit them to advance. I will make first-class cabinets at three dollars, your resolution to the contrary notwithstanding. No second class in mine. Knowledge makes the quality—not the resolutions of photographic conventions. In Chicago first-class cabinets are made at three, second at four, and third-class at six dollars.—E. F. HARTLEY."

The publication of this circular affords better than anything else a view of the difficulties which must and always will intervene to prevent an assimilation of prices for photographic work.

With regard to the resolution adopted by the convention, another difficulty arises: certain of the members are said to charge at present little more than three dollars a dozen for their cabinets. Now, unless human nature is different in America to what it is in England, such photographers will not find it an easy matter to raise their prices from three dollars to eight dollars per dozen— from twelve and sixpence to one pound, thirteen shillings and fourpence—at a bound; nor will it be pleasant for them, by retaining their former prices, to make the implied confession that their work is of a third-class order. Just fancy a convention of painters adopting resolutions concerning the prices to be charged to the public for artistic work of a certain definite size!

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PHOTOGRAPHY IN COLORS AGAIN.

BY LEON VIDAL.

In the *Petit Versaillais* of July 27, we read as follows:

M. Baudran is the inventor of the photo-impression which dates from 1872; this process already bordered on the marvellous and contained the germ of that one of which we are going to speak now. The secret of this discovery consists in the employment of a substance endowed with astounding properties, a sensitive material whose application yields results which savor of sorcery. M. Baudran mixes printing ink with this substance and spreads the mixture on a plate of zinc; then, between the plate thus prepared and the sun, he interposes an engraving, or an old parchment, or a delicate feather of a bird. In the course of a few minutes the object has impressed its image on the mixture: A sheet of white paper pressed against the zinc plate takes the impression, and the astonished eye perceives there the reproduction—prodigiously exact—of the engraving, with its most delicate lines, or of the parchment with the yellow color of the old ink, and the tint and stains of the skin, or of the feather with its infinitely small details of structure, all revealing themselves under the microscope.

But it was not this that M. Baudran was seeking; very few of the marvels of the photo-impression have left his portfolios. What was that to him in comparison to the subject of his dreams,—that is to say, *solar painting?* Such, in effect, was the dream of M. Baudran: To force the sun to come and paint for him in his *atelier* in the Rue de Noailles.

For thirty years M. Baudran has sought the realization of this dream. To tell what he has suffered morally and physically during these thirty years, to paint his hopes unceasingly destroyed and unceasingly renewed, to recall all his labors and all his sacrifices, would be to write the history not only of his own life, but that of his family; of his son who, early associated with the paternal labors and preoccupations, has served a hard, but salutary apprenticeship to existence. To-day all is forgotten; the dream is no longer a dream; it has become a miraculous reality.

M. Baudran has come out victorious from his long and severe combat with the impossible.

What would you say of a painter who, having outlined his picture on the canvas, should pour pell-mell over his sketch all the colors of his palette, and notify the sun to finish the work thus roughed out? You would laugh at such folly. Nevertheless this is substantially what M. Baudran does. Only, to ensure obedience, he employs this magical substance above mentioned; he charges himself, besides, with certain details of the operation to which the sun could not descend without loss of dignity.

Bring M. Baudran a canvas to paint, which you have covered with a coat of black paint, and the negative of any photograph you please; here is what he will do with them: After having obtained a photographic reproduction of the negative, enlarged or reduced as the case may be to suit the dimensions of the canvas, he spreads on the latter a certain quantity of the sensitive material—mysterious agent of his discovery—in which he has introduced the colors that a painter would employ to produce the picture of which the given photograph might be taken for a model. Then, on the canvas thus prepared, he applies the new negative and submits the whole to the action of the solar rays.

Now commences a marvellous work; the sun itself paints, through the negative; under its influence the colors decompose and recompose themselves, displace one another, disappear here, appear there, assuming all the values of the scale, with an incredible accuracy (*justesse*). Results which the brush, even in the most experienced hand, would require long hours to obtain, the sun produces in a few minutes.

When the operator believes the right moment has arrived, he removes the negative; to the profane, the canvas remains absolutely black; but the eye of the master perceives already if the sun has done its work. After a sort of scraping process, M. Baudran pours over the canvas a reagent which in a few seconds causes to appear an oil painting, whereof the colors are all fresh; the operation has lasted ten minutes. Pass your fingers over the picture and you will find them coated with oil colors; rub harder and you will expose to view the foundation coat of black paint first spread on the canvas.

Bring M. Baudran a water color and he will return it to you not with a copy, but with a duplicate (*double*)in which you can retrace the lightest marks of the brush, the slightest stains or spots in the paper; it is impossible to distinguish the original from the reproduction.

By the same process M. Baudran paints on porcelain; he will shortly make pastels. We might write columns if we should cite all the marvels which are displayed in his *atelier* and enumerate the multifarious applications of his invention—applications which he sums up thus: Reproduction of everything, on everything, with everything.

M. Baudran's invention has been officially investigated in his *atelier* by experts delegated by the Ministry of Fine Arts. He has kept it secret for five years, not wishing to publish it until the results he has obtained should have been consecrated by time. But some recent indiscretions have drawn attention to his labors and his name, which will be famous to-morrow. Success has not intoxicated him; in face of the admiration of his visitors, he contents himself by remarking with touching modesty: 'Any one might have found out this. It is not an invention, it is a simple discovery!' "

We cannot speak *ex professo* of a process which is absolutely unknown to us and whereof we have seen only a very small number of results, very incomplete besides.

Evidently we must be on our guard against the, perhaps, too absolute affirmations of the preceding article. The dithyrambe is *à la mode* in matters of invention. They are all marvellous—that is understood—but if we examine more coolly the case of M. Baudran, we find ourselves led to remark, from the statements of the *Petit Versaillais:*

1st. That he spreads on a zinc plate a mixture formed of printing ink and some material sensitive to light; 2d. That he then exposes this plate to the action of light through a negative or any more or less translucent screen; 3d. That at the expiration of a few minutes, the luminous action having produced its effect, a sheet of paper is pressed against the zinc and one then sees impressed upon it the image of the negative.

Such is the principle of the invention, but applied to impressions in polychrome.

We have then, a substance sensitive to light, capable of allying itself with fatty bodies mixed with coloring matter; a substance susceptible, under the action of a developer or dissolvant, of manifesting the effect produced by light. "The sun," says the article quoted, "painting through the negative; the colors under its influence decomposing and recomposing themselves, displacing one another, disappearing here, appearing there, assuming all the values of the scale with an incredible accuracy."

We avow that we understand nothing about this operation of displacement of colors, and we rather believe, until proof to the contrary is forthcoming, that M. Baudran places locally his colors on the black canvas in flat tints, following the indications of the picture, and that his coating sensitive to light models itself very simply, similarly to that which takes place in the albumen process which we have previously described.

The black foundation is only necessary when opaque colors are employed; but for water colors it would not be suitable.

We have seen a reproduction of a water color executed by M. Baudran, and we were unable, on account of a (perhaps accidental) imperfection in the result, to form a sufficiently complete idea of his invention from the point of view of the rendering. We have also had occasion to see one of his reproductions of an oil painting on several zinc plates. The proofs in the rough—that is to say, without repainting—were absolutely incomplete.

Our rôle is always to encourage investigators, and far be it from us to say or do anything which might have the air of criticising their labors; only, we think that it is proper, while giving due importance to each discovery, to abstain from crying out immediately: "Behold, a miracle," or "sorcery."

M. Baudran, who is represented to us as a very modest man, knows this even better than we do;

and therefore he is a little annoyed by all the noise (undoubtedly premature) which is being made about his process of photo-painting.

To sum it up, it is a process in which the part of the sun is less than some people are willing to admit. The sun acts on a sensitive coating laid on with colors chosen in advance, without the negative having any other part to play but that of a screen more or less opaque.

This much we affirm, because if one sends to M. Baudran a negative of a painting without at the same time sending the painting itself or a model of it, it is impossible for him to show you a reproduction thereof in colors, unless he colors it from imagination.

It suffices to reflect on this fact, *which we state as an absolute certainty*, in order to dispose of the exaggeration of language of which any one is guilty in saying that the colors displace themselves, compose and recompose themselves.

According to the varying translucency of the negative, the light can penetrate more or less deeply into the layers of various (and separated) colors, just as in the carbon process with bichromated gelatine; but in such a case there is neither displacement, composition or recomposition, but simply elimination of portions more or less deep, of the variously colored coating.—*Le Moniteur de la Photographie.*

THE WAY HISTORY IS WRITTEN.

For some months past the great political journals have taken a great interest in writing up the popularization of photography; they are emulating each other in the endeavor to show that the practice of the photographic art is henceforth open to everybody, and that a few minutes only are necessary for learning the management of the objectives and of photographic processes; and herein they are right.

Far from us be any idea of contradicting them; only, in undertaking this laudable work they make blunders which, while not very serious in themselves, it is necessary to rectify in the interest of history. We read, for instance, in *Le Figaro* of August 4th, the following passage:

"To-day photography is the fashion. The number of people engaged in it is incalculable. In the midst of a universal commercial crisis, the makers of photographic apparatus alone are making money. Everybody dabbles in it; the young ladies 'operate themselves,' like Pierre Petit, and the young men scale the highest peaks, camera on back, to obtain fresh views.

"It is a craze—and a craze in no immediate danger of dying out, for the colleges are educating a generation of zealous photographers, and the facility of the new processes incessantly multiplies the number of adepts.

"Formerly, photography exacted complicated and delicate manipulations; the collodion then employed had a disagreable smell; objectives capable of giving satisfactory negatives were horribly expensive; the exposure was long, the results always uncertain, and above all—terrible inconvenience—it was impossible to make the smallest portrait without daubing oneself all over—fingers, nails, and face, with abominable brown stains, which could only be made to disappear by rubbing with that most terrible of poisons, cyanide of potassium—in other words, prussic acid.

"It was necessary to possess the 'sacred fire' in order to surmount such obstacles, and if any one was tempted to try the Daguerrean art, almost always did he renounce it after a hundred fruitless attempts at the feat of sleight-of-hand involved in collodionizing equally, at a single operation, the entire surface of a glass plate.

"To day this state of things no longer exists. Thanks to the fertile invention of a Belgian *savant*, whose name must be mentioned, because he has generously given his discovery freely to the world—Dr. Monckhoven- all is changed. There is no longer any difficult or dangerous manipulation to accomplish; you buy ready-made the sensitive plates of gelatino-bromide of silver (pardon the barbarism of these technical names!) which certain chemists sell, of the first quality, at the price of two francs a dozen, and which preserve their properties for three or four years; you expose them in cameras furnished with very ordinary lenses, the duration of exposure being only a tenth or a fiftieth of a second; you develop them by soaking in a special bath prepared in advance, and you see appear perfect images, as fine as those that the most skillful photographer could make formerly in ten times the length of time."

Evidently the writer of the article from which the above is an extract, is totally ignorant of photographic science, and abandons himself agreeably to fantastic variations on the legerdemain of collodion just as he attributes to our deeply-regretted Monckhoven an invention which he has never claimed, and thanks to which, while playing a most able part in its development, he has succeeded in building up a most profitable industry.

Such is the actual truth of the matter. But articles like the above, distorting so much the facts, and surviving for the use of future centuries, may very likely serve some day to prove the assertion that we have to thank Monckhoven for our knowledge of gelatino-bromide of silver, *a discovery which he has abandoned gratuitously in the general interest, without wishing to derive any profit therefrom.*

Certainly Monckhoven has done too much for photography not to be entitled to a considerable sum of gratitude from all lovers of science; it is then superfluous to attribute to him a merit to which he has no claim.

As a matter of fact, his formula for gelatine emulsion, perfect indeed, contributes much to the propagation of processes of photographic reproduction; he has, in this manner, created a most prosperous industry, the success of which, in spite of his lamented death, is constantly increasing. His share of glory from this point of view alone, without speaking of all his other brilliant achievements, is already so great that it is surely unnecessary to impute to him the invention of the gelatino-bromide process.

But this is how history is often written.—L.V. *Le Moniteur de la Photographie.*

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Gallic Acid in the Developer.—A New Restrainer.

BY H. Y. E. COTESWORTH.

The intimate connection between pyrogallic, gallic, and tannic acids, from a chemical point of view, would suggest that their behaviour as developers should be in some manner similar. But surely this latter is not the case. True, both gallic and pyrogallic acids have found their use in the old form of silver development ("physical" development is it not called?), and tannin has been put forward as a "sensitiser" of previously insensitive iodide of silver. Yet, on the other hand, when we turn to chemical development, tannin is not only useless but has years ago been shown to be a restrainer, and gallic acid has not apparently proved much more effective, if we may judge from its pretty general disappearance from the photographic laboratory, while pyrogallic reigns supreme.

In the course of some experiments with tannin and gallic acid as additions to the ordinary pyro. and ammonia developer, for the purpose of altering the color of the image, I found certain peculiarities belonging to each. I commenced these experiments remembering the variety of beautiful colors occasionally obtained under certain conditions of exposure and development with plates prepared by Major Russell's rapid dry process. These colors varied from all and every shade of brown, through different grades of red and purple, to the purest crimson or magenta ever produced by the dyer. Major Russell himself, in his *Tannin Process*, published, I think, in 1863 or 1864, called attention to the color effects produced by the admixture of the three substances I have named—gallic, pyrogallic, and tannic acids—when present together during development, (whether originally employed in the preservative or in the developer matters not) the coalition of the three—or two of them—sufficed to give effects that could not be obtained with any one singly.

But I may at once say that with gelatine plates I have had no success whatever in my attempt to secure tones not obtainable with pyro. alone. Why this should be in the case of gelatine plates I cannot pretend to say, especially when I know from actual practice that with dry collodion plates and the same, or very similar, development particular tones could be got with almost certainty when tannin and pyro. were present during development. The result depended chiefly upon the exposure, as seems to be the case with the modern gelatino-chloride plates and ferrous citro-oxalate development. At any rate, the fact to me is pretty plain that gelatine and collodion plates are quite different in their behaviour under similar treatment.

While engaged on these experiments I happened to come across, in a back volume of the *Journal*, some editorial remarks on the use of gallic acid and ammonia as a developer for collodion dry plates. Seeing the relative prices of pyro. and gallic acid are very different, and with the prospect that the vagaries of gelatino-bromide might possibly result in my discovering that gallic acid was a more powerful and valuable developing agent than pyro., I "prospected the ground." With what result? Well, astonishment at least. I may as well detail my experiments.

A plate of known value as to sensitiveness was exposed for the normal time, and a developer of the ordinary character, only substituting gallic for pyrogallic acid, applied. Saturated solution of gallic acid was used instead of pyro., and ammonia and bromide added in usual quantities. The result as regards image was absolutely *nil*, though the ammonia was "piled on" until it would have fogged any decently-ordered plate if pyro. had been used instead of gallic acid. I thought I must have made some simple omission in the process of exposure—probably had not drawn the shutter; so I repeated the experiment, exposing a plate, cutting it in halves and developing one with pyro., and *failing* to develop the other with gallic acid. The latter half of the plate was washed and treated with the ordinary pyro. developer, when a clean, under-exposed negative resulted, though the other portion of the plate had been fully if not overdone.

This result set me thinking as to the possibility of gallic acid proving a practical restrainer for over-exposed plates; and in the end, to cut a rather long description short, I found it to be not only that but more. It is a restrainer of a very powerful character, and it may be used *in conjunction with pyro.* to give vigor and density with a very small proportion of pyro., if time be no object. Thus, half-a-grain to the ounce of pyro., supplemented by gallic acid, will give a negative of far greater vigor than a three-grain pyro. solution if a little time be allowed for its action. This, however, is not an important application.

In cases of known over-exposure the addition of a certain quantity of gallic acid to the ordinary developer will prove as effectual as citric acid; or the plate may be soaked first in gallic acid and then developed in the ordinary manner. As an instance: I to-day exposed a plate very fully, cut it into three portions, developing one in the ordinary manner, treating it as a case of *known* over-exposure; the second with half the quantity of pyro. with the addition of gallic acid; the third was soaked in gallic acid first, washed, and developed in the ordinary manner. The first is thin and feeble from over-exposure; the second and third, though five or six times the quantity of ammonia had to be used, are strong, vigorous negatives, without a trace or symptom of over-exposure.—*British Journal of Photography.*

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